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GREATER TORONTO AREA 3Rs ANALYSIS

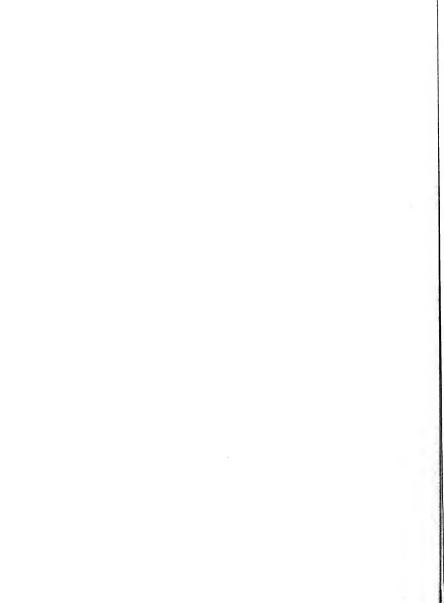
NATURAL ENVIRONMENT TECHNICAL

APPENDIX

DRAFT - NOVEMBER 1993



Ministry of Environment and Energy



GREATER TORONTO AREA 3Rs ANALYSIS NATURAL ENVIRONMENT TECHNICAL APPENDIX

Prepared by M.M. Dillon Ltd. for Fiscal Planning and Information Management Branch Ministry of Environment and Energy

DRAFT - NOVEMBER 1993



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1.0 INTRODUCTION

1.1 Background

In 1989, the government of Ontario announced its commitment to meeting a Provincial target of at least 50% reduction of waste going to landfills and incineration by the year 2000. This target, a waste diversion target to be achieved through waste reduction, reuse and recycling (the 3Rs), was confirmed by the present government in 1990.

To facilitate the achievement of the 50% target, the Province introduced the Waste Management Act, 1992. The Act broadens the government's powers to reduce waste sent to disposal through a variety of means. It also vests powers in the Interim Waste Authority (IWA), an agency created to ease the waste disposal crisis in the Greater Toronto Area (GTA). The IWA is complying with its mandate by conducting environmental assessments to locate three long-term landfill sites in the GTA.

The GTA Regional Municipalities of Peel and Durham are each defined for the IWA process as separate "primary service areas". Metro Toronto and the Regional Municipality of York have been defined as a separate combined primary service area. Each of the three defined primary service areas are proposed to receive one new landfill facility identified through the IWA's process. The fifth GTA Regional Municipality, Halton, has already obtained approval for a landfill site and thus is not part of the present siting process.

1.2 Purpose of Study

This study has two purposes, each of which relates directly to a requirement created by the Waste Management Act.

The first requirement pertains to waste estimates. Section 14 of the Waste Management Act requires the Minister of Environment and Energy to provide a written estimate as to:

a) the amount of waste that would otherwise be expected to be generated in the primary service area (i.e. each of Peel, Durham and Metro/York) during a twenty-year period that will not be generated because of waste reduction efforts; and b) the amount of waste that will be generated in the primary service area during a twenty-year period that will not need to be disposed of in the site because of the reuse or recycling of materials that are or could become waste.

These waste estimates were provided to the IWA by Minister's letter dated May 15, 1992. A copy of this letter may be found in Appendix A. The current study provides additional analysis of 3Rs activities, in support of the waste diversion estimates previously provided.

The second requirement pertains to analysing the 3Rs as "alternatives to" landfill waste disposal sites. Section 15 of the Waste Management Act requires that the IWA environmental assessments contain a description of, and statement of rationale for the 3Rs, as well as evaluate matters relating to the 3Rs as an alternative to the landfill waste disposal sites. By administrative agreement, MOEE committed to provide such a rationale and evaluation to the IWA for use in its environmental assessments. The present report fulfils this requirement.

1.3 Study Approach

The GTA 3Rs Analysis identifies and assesses alternative 3Rs systems, comprised of combinations of 3Rs programs, technologies and practices, that could reasonably be implemented in the GTA. It also determines the potential for each 3Rs system to divert waste over the twenty-year minimum life expectancy of the GTA landfill sites, and identifies the advantages and disadvantages of each system.

For purposes of the present analysis, an array of conceptually different 3Rs systems have been identified for addressing residential wastes, as well as for institutional, commercial, and industrial (IC&I) wastes. For each system, estimates of the amount of waste the system could potentially divert from disposal have been determined. An assessment, done on a non-site-specific, generic level and documented in this report, identifies the advantages and disadvantages to the environment of each potential 3Rs system, in keeping with the *Environmental Assessment Act*.

In conducting the 3Rs work, and providing estimates of waste that will not require disposal in the IWA established sites, MOEE is acting as a reliable authority in accordance with its legislative mandate, and not as the proponent or co-proponent of any of the 3Rs systems discussed. The alternatives presented in this report are not in any way structured as detailed implementation plans for the Province, the Regions or the private sector.

1.4 Purpose of the Natural Environment Assessment and Study Objectives

This technical appendix documents the natural environment input into the GTA 3Rs analysis. Natural environment effects are defined as the potential for loss/removal or disruption to any terrestrial or aquatic features and emissions to the atmosphere.

The primary purpose of this natural environment assessment is to identify and assess the significance of effects to the natural environment which may occur as a result of the implementation of a 3Rs system within each of the four Regional municipalities (Metro Toronto, Peel, York and Durham). The results of this assessment are to serve as input into the overall 3Rs systems evaluation.

The study objectives of the natural environment assessment are as follows:

- Identification of existing natural environment conditions within each of the four Regional municipalities.
- Prediction of natural environment effects as a result of the implementation of any of the alternative 3Rs systems within each of the four Regional municipalities.
- Analysis of the potential natural environment effects including the development of mitigation measures for the purposes of identifying net effects.
- Ranking the systems of the four Regional municipalities from the perspective of the natural environment.

1.5 Outline of Report

Chapter 2 presents the study approach followed in the natural environment assessment.

Chapter 3 provides a general description of the existing natural environment conditions in the Regions of Durham, Metro Toronto, York and Peel.

Chapter 4 discusses the results of the assessment of the alternative 3Rs systems from a natural environment perspective.

Chapter 5 summarizes the findings of the assessment of 3Rs systems with respect to the natural environment.

2.0 APPROACH

This section outlines the approach followed for identifying potential effects to the natural environment from 3Rs components and alternative 3Rs systems.

2.1 Impact Assessment Criteria

The natural environment includes land, water, plant and animal life, and air aspects of the environment. To assess the potential effects of the alternative 3Rs systems on the natural environment, it was necessary to develop a set of impact assessment criteria.

The following three criteria were developed:

- Potential for effects to terrestrial systems and resources;
- Potential for effects to aquatic systems including surface and ground water resources; and
- Potential for effects to the atmospheric environment.

The indicators, rationale and definition for these criteria are presented in Table 2.1.

The Natural Environment impact criteria formed the basis for the assessment of the alternative 3Rs systems. As specific components or facility locations were not known for any of the systems, locations of sites typical to the system components were assumed (e.g. waste management facilities are often located on industrial lands, landfill sites or at municipal works yards). The impact assessment criteria and indicators reflect this level of detail. The criteria and their indicators addressed the potential for the loss/removal and/or disruption of resources and features.

The natural environment assessment criteria and indicators were developed in "draft" and circulated for agency review and comment. Review comments received on the criteria and their indicators were addressed and incorporated.

2.2 Data Sources and Methods of Analysis

A variety of sources were used to compile information on potential effects to the natural environment due to alternative 3Rs systems. The analysis of the collected data relied on the identification of potential effects and the success of mitigative measures implemented by established and operating 3Rs components.

Three specific activities were used to assist in gathering data:

- An extensive literature review was undertaken to identify documented specific effects on the natural environment;
- Telephone contacts were made with operators of 3Rs system components to obtain actual operating experience and knowledge of effects on the natural environment from 3Rs components; and
- Information collected by the Ministry of Environment and Energy (MOEE) as part of a survey of registered complaints or non-compliance with operating conditions of any 3Rs components was reviewed.

Information and input from other study team members, based on their professional experience, was also considered as part of the data collection and analysis.

The following describes in detail the three key data collection activities including a summary of the data collected.

2.2.1 Literature Review

An extensive literature review was undertaken to identify any documented evidence of effects to the natural environment due to the development and operation of 3Rs components/systems. The literature review was also intended to identify potential measures to mitigate any effects.

TABLE 2.1 NATURAL ENVIRONMENT CRITERIA GROUP ASSESSMENT CRITERIA AND INDICATORS

Criteria	Indicator	Definition	Rationale
Potential for Effects to Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and resources Potential for disruption effects to terrestrial systems and resources	This criterion addresses the potential for the loss/removal and disruption to terrestrial systems and resources. This includes terrestrial biological systems and forest, mineral and agriculture resources.	Addresses the goal of minimizing impacts on natural environment communities as required by the Environmental Assessment Act (EA Act).
Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems including surface and ground water resources Potential for disruption effects to aquatic systems including surface and ground water resources	This criterion addresses potential for the loss/removal and disruption to aquatic systems and resources. This includes aquatic biological systems and surface water and ground water resources.	Addresses the goal of mininizing impacts on natural environment communities as required by the Environmental Assessment Act (EA Act)
Potential for Effects to the Atmospheric Environment	Potential for atmospheric emissions	This criterion addresses the potential for effects to the atmospheric environments. This involves effects due to emissions such as gases, odour and dust.	Addresses the goal of minimizing impacts on natural environment communities as required by the Environmental Assessment Act (EA Act)

The literature review conducted included books, manuals, periodicals, newspaper articles, technical reports and other published and unpublished documents. The literature review focused mainly on experience with 3Rs components within North America and, to a lesser extent, Europe. A bibliography is included following Section 5.

The effects identified through the literature review focused mainly on effects to aquatic systems including surface and ground water resources and on effects to the atmospheric environment. Minimal reference was identified on any potential effects to terrestrial systems and resources from 3Rs components.

Potential effects to terrestrial systems were identified as being the loss or removal of an existing resource. This loss or removal would be the result of siting a large scale 3Rs facility (e.g. processing facility, compost facility) requiring a significant amount of land. However, the available information notes that generally this effect is easily mitigated by siting any such facility in the appropriate location. An appropriate location was identified as industrial zoned areas or an existing landfill site.

Effects to aquatic systems were not specifically categorized as resulting in the loss/removal or disruption of aquatic systems including water resources. The most frequently cited effects included the discharge of leachate from a centralized composting facility and its release to surface water and ground water. Mitigative measures are readily available to prevent surface water runoff from entering the site, collecting any on-site runoff and the installation of a low permeability pad or leachate collection system underneath the compost area to prevent contamination of ground water. The literature did not identify any instances where these measures had failed to mitigate the potential effects. The development of large scale materials processing or recovery facilities (MRFs) and central compost facilities was also identified as potentially disrupting local surface water drainage patterns. Typically, the development of these facilities requires that a storm water management plan be developed.

Literature on the potential effects to the atmospheric environment were identified for only a few 3Rs components. Emissions to the atmosphere were identified most commonly with central compost facilities. Based on the reviewed documentation, the air emissions of concern from municipal solid waste composting operations fall into two broad categories: bioaerosols and gaseous emissions. Bioaerosols include bacteria, fungi, viruses and microbial products. The primary pathway for the toxic components of these bioaerosols to become airborne is associated with dust and particulates generated during waste handling and processing before exposure to thermophilic conditions (temperatures of 40°C to 60°C). Based on the available data, there was no evidence that levels of bioaerosols have occurred above background levels (on-site and off-site) in operating compost facilities.

Volatile organic compounds (VOCs, e.g. benzene, toluene, acetone) and odorous compounds are gaseous emissions that are of concern to the atmospheric environment. Gaseous emissions are created in two ways at composting facilities. This includes the volatilization of specific compounds present in municipal solid waste and during aerobic and anaerobic decomposition in which compounds are broken down into lighter and more volatile compounds. During active composting, VOCs are quickly volatilized and emissions rapidly diminish during composting. Studies indicate that odour generation is often greatest during the first ten days of composting. Available data indicates that VOC emissions are well below acceptable limits. The available data generally indicates that facilities where food wastes or mixed wastes are composted have a higher likelihood to generate these types of emissions.

The production of synthetic VOCs are best prevented and minimized through the removal of VOC contributors prior to composting. This includes the source separation of materials such as solvents, paints, adhesives and aerosols. Source separation programs might include the collection of these household hazardous wastes. If a compost facility is enclosed, emission control systems are normally used to capture and treat the building air. The generation of odours at a compost facility is best avoided by maintaining aerobic compost conditions. Proper designs of the composting system, proper management of the composting process and odour control measures (e.g. chemical scrubbers and biofilters) are all methods to prevent and minimize odours.

Studies have also been completed with respect to air emissions at materials recovery facilities (MRFs) and Mixed Waste Processing facilities. Emissions associated with these facilities are typically observed inside the facility. Emissions include exhaust fumes from waste collection vehicles and mobile equipment, bioaerosols and gases emissions. The bioaerosols and gases emissions (VOCs) are directly related to the mixed waste facilities. This is due to the unsorted nature of the waste stream and the presence of large quantities of organic materials. Mitigation of air emissions within materials processing facilities is often by emission control systems to collect and treat the air.

Following the review of available literature, it was identified that effects on the natural environment from 3Rs facilities was not substantively documented.

2.2.2 3Rs Component Operator Contacts/Interviews

In order to better estimate potential effects on the natural environment, a number of operators of various 3Rs components were contacted. It was felt that the first hand

knowledge or experience of an operator may provide some insight into environmental effects not previously identified and on new or innovative mitigation measures.

A list of 3Rs components was identified at the outset as having some potential to result in effects on the natural environment. A number of operator contacts were identified, with the assistance of the technical study team, for each of the components. It was noted that variations of compost and processing facilities exist based on the type of waste being received. It was anticipated, as a result of the literature review, that potential effects from a compost facility may be more dependent on waste type than at a processing facility. When contacting operators, it was a priority to identify a cross-section of operations, based on waste type, for interviews. This would include facilities managing residential wastes and also facilities managing wastes from the institutional, commercial and industrial (IC&I) sectors.

The 3Rs components for which operators were to be interviewed included:

Compost - In-vessel

Windrow

Processing - Mixed Waste

Materials Recovery

Residential Blue Box

IC&I Wastes

- Wet/Dry

Household Hazardous Wastes - Permanent Depot

A list of the 3Rs facility operators who were contacted including operator/contact name, location, date of interview and facility type are included in Schedule A.

A number of questions were prepared to guide each interview and to ensure consistency in the collection of information. Based on the literature review and discussions with the study team, many effects associated with 3Rs components were identified as being related to the social environment. Consequently, the prepared questions were developed, and interviews conducted with the social impact assessment study team members. The list of questions which were used as the basis for the interviews is also included in Schedule A.

The majority of effects identified by 3Rs facility operators related to aquatic systems including ground and surface water resources. The potential effects were not typically a result of the location of a facility. Most facilities (processing and compost) were

purposely sited at existing landfill sites since it was viewed that these locations had already impacted the environment and that appropriate controls were in place to minimize effects to the natural environment (e.g. leachate collection, surface water management). Other locations chosen by operators for facilities that were considered compatible and appropriate land uses were industrial areas and municipal works yards. One respondent who operates a windrow compost facility did express some concern with the close proximity of the facility to a floodplain.

Potential effects to ground and surface water resources were identified for compost facilities and household hazardous waste depots. No effects were identified for processing facilities as there was no discharges from any of these dry waste processing facilities. Most centralized compost facilities whether in-vessel or windrow have some type of mitigative controls in place to minimize effects. The discharge of leachate was identified as a potential effect from compost facilities. Many facilities collect the leachate and recirculate it as process water, resulting in a closed loop operation. Other operators indicated that collected leachate was either hauled directly to a sewage treatment plant or discharged to the sanitary sewer. Virtually all compost facilities contacted have some form of surface water management program in place. Compost sites are graded so that surface water drains away from the compost to collection ditches or a pond. Facilities are also surrounded by berms or ditches to prevent surface water runoff from entering the compost area. At some facilities the surface/storm water management system is also used to collect any leachate. In these circumstances the compost area is covered with a layer of low permeability asphalt or some other material to prevent leachate from migrating downwards. Leachate may then drain on the surface to the collection system. Collected surface water is monitored and treated, if required.

Similar to other 3Rs facilities, the permanent household hazardous waste depot included controls to prevent effects to ground and surface waters. The facility contacted was located at an existing landfill site. Design features are included in the facility to prevent discharge of wastes to the environment. This includes self contained areas for different types of HHW with separate sump drains. No drains are connected to a sewer system. Wastes collected in the sump are pumped out and managed accordingly. The area surrounding the depot is graded and sloped to its own sump drain to collect any spilled wastes.

No specific effects to terrestrial systems and resources were identified through the operator interviews. However, it was noted that some facilities had undergone site selection processes to identify the most suitable location for the facility. Typically a facility was often located at an existing landfill site, in an industrial area, or municipal

works yard since these locations were already developed and would not result in further effects to the terrestrial environment.

With respect to effects to the atmospheric environment, the main effect identified was odours from compost facilities. These odours were always attributed to operational problems. Improving operating methods and installing emission controls (e.g. biofilters) resulted in improved conditions. Other effects mentioned included dust and from one facility, fog. The fog was the result of poor compost facility design and operation which resulted in a large amount of moisture loss from the compost. Potential effects to the atmosphere may also result from accidents or spills at a household hazardous waste depot. The facility contacted had an air exchange/filtering system in place and continual air quality monitoring to mitigate any potential effects to the atmospheric environment.

2.2.3 Complaint/Compliance Survey of 3Rs Facilities

The literature review and operator contacts typically identified potential effects to the natural environment from the point of view of the 3Rs facility proponent. To identify any potential effects, from an alternate point of view, it was proposed that a review of recorded complaints or compliance reports be undertaken. Complaints registered by the public with respect to the operation of an approved 3Rs component are kept on file by the regulating agency, the Ministry of Environment and Energy (MOEE). These records are typically kept by the Regional Offices and Investigations and Enforcement Branch (IEB). The non-compliance with approved operating conditions is also recorded by the IEB. A review of recorded information on complaints and IEB actions taken at 3Rs facilities within the Greater Toronto Area was subsequently undertaken by the MOEE. The information collected by the MOEE was then reviewed to identify if any complaints or cases of non-compliance were related to effects on the natural environment and the degree of severity of the effects. Mitigative measures taken, if any, were not identified as part of the MOEE's data gathering process.

The majority of complaints recorded were for odours from compost facilities. Odours were also attributed to a facility transferring and processing food wastes. The only other emissions to the atmosphere noted was dust. The sources of the emissions were a transfer/materials processing facility and also from the chipping of wood or brush for composting. Few complaints were observed with potential effects to aquatic systems and water resources. However, leachate was observed at a central compost facility and storm water runoff from another compost facility was identified as the cause of odours in a nearby storm sewer.

No complaints or reports of non-compliance were identified resulting in potential effects to terrestrial systems and resources.

2.3 Assumptions

The natural environment includes land, water, plant and animal life, and air aspects of the natural environment. Each of these environments are very diverse across the GTA. This diversity includes a wide variety of significant features and resources. The implementation of an alternative 3Rs system may potentially affect the natural environment within the GTA. However, for some components, the effect to the existing GTA environment will be dependent upon the specific location of the system components (i.e. facilities) and the existing environment in the vicinity of the components.

For the purposes of this study, no site-specific locations for 3Rs components are identified. However, when considering potential effects to the natural environment, typical locations for components are considered.

The potential "worst case" effects on the various aspects of the natural environment are recognized for a typical location. Effects on specific natural environment systems or resources within the GTA are not identified.

It is also noted that when considering potential effects, only those effects directly attributable to a 3Rs component or system were identified. Effects to other aspects of the natural environment which may occur as a result of the 3Rs component or system were not identified or considered. For example, a central compost facility was identified as having potential effects to terrestrial systems and aquatic systems due to siting the facility and from discharges of leachate or stormwater from the facility to ground or surface waters. However, the effects to the natural environment (i.e. terrestrial systems and aquatic systems) from the decreased reliance on waste disposal (e.g. landfilling) as a result of the increased level of composting, were not considered. Another example of effects not considered was the effects to the natural environment from the actual recycling process for a material (e.g. effects from effluents of a recycling process) as opposed to the diversion of the material from the waste stream by a 3Rs system which allows the material to be recycled.

Mitigative measures identified to minimize the potential effects typically fall within two categories. These categories are the siting of any facility and the installation of facility design features to control or minimize any potential effects. It was assumed that mitigation was available within these categories.

Based on the data collection, virtually all potential effects to the natural environment from 3Rs components are attributed to components which require a Certificate of Approval (C of A) from the MOEE. This C of A is required to both establish and operate components such as transfer stations, depots, materials recovery/processing facilities and compost facilities. As a result, it was assumed that any 3Rs component of this nature would be developed in a manner that fulfils the necessary MOEE approvals. The resultant net effects for these 3Rs components are consequently assumed to be within, and to meet, the applicable standards and regulations in Ontario.

3 EXISTING CONDITIONS

The following presents a discussion of the existing natural environment conditions in the Regions of Durham, Metro Toronto, York and Peel. The descriptions are a general overview of the conditions in each Region for geology/ground water, surface water and biological aspects of the natural environment. The information is provided to identify existing natural environment conditions in the Regions to provide a basis for assessing the alternative 3Rs systems. These descriptions are used to facilitate the prediction of potential effects to the natural environment, when comparing and evaluating the alternative 3Rs systems. Much of the information presented in the descriptions is based on Dillon and Gartner Lee (1987) and MacLaren (1990).

3.1 Durham

3.1.1 Geologic/Ground Water Setting and Ground Water Use

Geologic/Ground Water Overview

The geologic and ground water conditions within Durham Region can be quite variable, largely owing to the fact that the area has been glaciated several times in recent geologic history. Fortunately, there has been a great deal of study in the area, and therefore the geologic and ground water conditions are reasonably well mapped. Within the Region there are five very broadly defined geologic/ground water settings:

- Shallow Bedrock
- Lake Ontario Shoreline
- South Slope Till Plain
- Oak Ridges Moraine
- · North Slope Till Plain

Major Aquifers

Major aquifers occur throughout the Region of Durham. These include both overburden and bedrock aquifers. Substantial quantities of ground water are available from the major overburden aquifers in the area. Municipal and domestic water supplies are provided from overburden aquifers. Lesser quantities of generally poorer quality water are available from bedrock aquifers throughout most of the Region.

Aquifer characteristics of the overburden fall into four broad areas based on physiographic and stratigraphic relationships. These are:

- Oak Ridges Moraine;
- South Slope;
- North Slope;
- Shallow Overburden.

Ground Water Use

Much of the southern portion of Durham Region, south of the Oak Ridges Moraine, is urban land which is serviced by water from Lake Ontario. Urban growth is expanding northward from the built-up area along the Lake Ontario shoreline. As this occurs, communities are switching from traditional ground water supplies to Lake Ontario water. Major overburden aquifers in the South Slope aquifer complex are therefore gradually being abandoned as a source of domestic water supply. However, the demand for municipal ground water supplies from the Oak Ridges Moraine has increased in recent years from communities to the north as residential development continues to increase the demand for water.

Bedrock aquifers are not heavily utilized as a source of municipal or domestic water in Durham Region due to the relatively poor aquifer characteristics of the bedrock. Exceptions to this occur where there is a shallow depth to bedrock and no alternative water supplies are available.

3.1.2 Surface Water and Surface Water Use

Drainage

The Region of Durham is situated in three major watersheds, namely:

- Lake Simcoe/Georgian Bay;
- · Lake Ontario; and
- Trent River System.

The drainage divide between these three major watersheds runs from east to west.

The northwestern quarter (approximately) of Durham drains northwest to the Lake Simcoe/Georgian Bay flow system. The major streams in this area are:

- Black River;
- · Pefferlaw Brook; and
- Beaverton River.

The remainder of the Region drains to Lake Ontario. The southerly half (approximately) of Durham drains directly to Lake Ontario. The major streams in this area are:

- Rouge River;
- Duffin Creek;
- Lvnde Creek;
- Pringle Creek;
- Oshawa Creek:
- Farewell Creek:
- Bowmanville Creek:
- Wilmot Creek; and
- Ganaraska River (part).

The northwestern quarter (approximately) of Durham drains to the Trent River System. Drainage from Lake Scugog is north and east via the Trent River System discharging eventually to Lake Ontario. The major streams in this area are:

- · Nonquon River; and
- East Cross Creek.

The major surface water body in the area is Lake Ontario. The Region of Durham borders on Lake Ontario. Two other major lakes in the Region include Lake Simcoe and Lake Scugog.

Stream Water Quality

A number of active water quality stations are located on rivers and streams in the Region. These stations are part of the Provincial Water Quality Monitoring Network operated by the Ministry of Environment and Energy. In addition to routine data collection, special studies have been undertaken on some watercourses, including Wilmot Creek.

Water quality in streams in the area is generally impacted by surface water runoff from:

- urban land use:
- · transportation corridors; and
- · agricultural land use.

Better water quality is likely to be found in the head water areas of watercourses where point source inputs and urban land use are absent and agricultural intensity is low. Important fisheries occur in several streams throughout the area.

Lakes

As indicated previously, there are three major lakes in the study area:

- Lake Ontario:
- Lake Simcoe; and
- Lake Scugog.

Lake Ontario has received much study by provincial and federal agencies, due to its important role as a source of drinking water to communities along its shore and its high recreational value.

Persistent toxic substances and eutrophication have been identified as problems in Lake Ontario by the International Joint Commission and its member agencies.

A number of areas of concern have been identified in the Great Lakes including two near the Region, namely Toronto Harbour and Port Hope, respectively. Provincial Water Quality Objectives are exceeded in these areas. As a result, intensive studies have been initiated to develop remedial action plans.

Eutrophication has long been recognized as a problem in the lower Great Lakes. Annex 3 of the 1978 Great Lakes Water Quality Agreement between Canada and United States outlines reductions in phosphorus loadings to Lake Ontario to be achieved by the parties to the Agreement. As a result, the provincial and federal governments are jointly working towards a program to reduce the input of phosphorous through point source and non-point source remedial measures.

Lake Simcoe has also received attention in recent years, primarily as a result of impairment of water quality from agricultural activities. The Lake Simcoe Environmental Management Studies (Lake Simcoe Environmental Management Committee, 1985) found

that the Lake is receiving an excessive supply of phosphorous which is contributing to eutrophication problems and identified various remedial measures that should be undertaken. The general water quality in the Lake is adequate for most recreational activities but localized problems occur.

Lake Scugog was investigated by the MOEE as part of its Recreational Lakes Program. At that time, water quality was found to be generally acceptable; however, bacteriological contamination was identified in some localized areas and the lake was found to be highly enriched and supported excessive amounts of aquatic plants and suspended algae.

Surface Water Use

Surface water in Durham Region is used for a wide variety of purposes including:

- · aquatic life;
- recreation;
- drinking water supply;
- industrial water;
- · agriculture; and
- waste assimilation.

Several major water uses occur along the Lake Ontario shoreline. These include intakes for municipalities and industries, and sewage plant outfalls.

3.1.3 Biological Characterization

The portion of the study area which drains to Lake Ontario is heavily urbanized. This has resulted in negative impacts on streamflow and water quality, which in turn have affected the structure of fish communities. Natural vegetation consists of remnant woodlots and treed river valley and ravine areas. These areas provide habitat for plant and animal species.

Major rivers in or near Durham Region within the Lake Ontario drainage basin include the Rouge and Ganaraska. Considerable effort has been expended in developing an anadromous salmonid fishery in this area. Major watercourses in the Region within the Lake Simcoe drainage basis include Pefferlaw Brook and Beaverton River. These watercourses generally support warm-water fish populations. Agricultural land uses are prominent in the basins of the watercourses draining to Lake Simcoe.

The Oak Ridges Moraine is a prominent topographic feature in Durham Region which acts as a watershed divide between the Lake Ontario and Lake Simcoe drainages. It lies in an east-west direction in the middle of the area. The Moraine is of biological significance because it contains large tracts of forest and it contributes baseflow to headwater areas of cold and cool-water streams.

The southern part of the study area is within the Deciduous Forest Region. Plant communities having southern affinities are well represented, for example, in the valley of the Rouge River. The northern part of the study area is situated within the Great Lakes - St. Lawrence Forest Region.

The biology of most of Durham Region has been relatively well studied. Basin and Regional surveys have established the status of bird and plant species.

3.2 Metro Toronto

3.2.1 Geologic/Ground Water Setting and Ground Water Use

Geologic/Groundwater Overview

The geologic and ground water conditions within Metro Toronto are variable, mainly due to the fact that the general area has been glaciated several times in recent geologic history. Generally, the geologic and ground water conditions are reasonably well understood in the area. Within Metro Toronto there are three very broadly defined geologic/ground water settings:

- Shallow Bedrock
- Lake Ontario Shoreline
- South Slope Till Plain

Major Aquifers

Major aquifers occur throughout Metro Toronto. These include both overburden and bedrock aquifers. Substantial quantities of ground water are available from the major overburden aquifers in the area.

Aquifer characteristics of the overburden fall into two broad areas based on physiographic and stratigraphic relationships. These are:

- · South Slope; and
- Shallow Overburden.

Ground Water Use

Metro Toronto is generally urban land which is serviced by water from Lake Ontario. Urban growth has expanded northward from the Lake Ontario shoreline. Communities in Metro Toronto have switched from traditional ground water supplies to Lake Ontario water. Major overburden aquifers in the South Slope aquifer complex have been replaced as a source of domestic water supply. Bedrock aquifers are not typically utilized in Metro Toronto either.

3.2.2 Surface Water Characterization

Drainage

Metro Toronto is situated in the Lake Ontario watershed. Surface water in Metro Toronto drains southwards to Lake Ontario.

The major streams and surface water drainage areas within Metro Toronto are:

- Etobicoke Creek
- Mimico Creek
- Humber River
- Don River
- Highland Creek and
- Rouge River.

The major surface water body in the Region is Lake Ontario. Metropolitan Toronto borders on the northern shoreline of Lake Ontario.

Stream Water Quality

Water quality stations are located on rivers and streams in Metro Toronto. These stations are part of the Provincial Water Quality Monitoring Network operated by the Ministry of Environment and Energy. In addition, to routine data collection, many special studies have been undertaken throughout the area including Mimico Creek, Humber River and the Don River.

Water quality in streams in the Region is generally impacted by both point source and diffuse source inputs including:

- industrial discharges;
- · urban land use; and
- transportation corridors.

Provincial Water Quality Objectives are exceeded for several parameters at stations throughout the Region.

Lakes

Lake Ontario has received much study by provincial and federal agencies due to its important role as a source of drinking water to communities along its shore, and its high recreational value.

Persistent toxic substances and eutrophication have been identified as problems in Lake Ontario by the International Joint Commission and its member agencies.

Areas of concern have been identified in the Great Lakes including one in Metro Toronto, namely Toronto Harbour. Provincial Water Quality Objectives are exceeded at this location. As a result, intensive studies have been initiated to develop remedial action plans.

Surface Water Use

Surface water is used for a wide variety of purposes in Metro Toronto including:

- · aquatic life
- recreation
- drinking water supply
- · industrial water; and
- waste assimilation.

Several major water uses occur along the Lake Ontario shoreline. These include intakes for municipalities and industries, and sewage plant outfalls.

3.2.3 Biological Characterization

The Region of Metro Toronto which drains to Lake Ontario is heavily urbanized. This has resulted in negative impacts on streamflow and water quality, which in turn have affected the structure of fish communities. Natural vegetation consists of remnant woodlots and treed river valley and ravine areas. These areas provide habitat for plant and animal species.

Major rivers in Metro Toronto and within the Lake Ontario drainage basins include: the Humber, Don and Rouge. Considerable effort has been expended in developing an anadromous salmonid fishery in this area.

The Oak Ridges Moraine is a prominent topographic feature north of Metro Toronto which acts as a watershed divide between the Lake Ontario and Lake Simcoe drainages. The moraine is of biological significance because it contains large tracts of forest and it contributes baseflow to headwater areas of the cold and cool-water streams.

Metro Toronto is within the Deciduous Forest Region. Plant communities having southern affinities are well represented, for example, in the valley of the Rouge River.

The biology of the Metro Toronto area has been relatively well studied. Basin and Regional surveys have established the status of bird and plant species.

3.3 York

3.3.1 Geologic/Ground Water Setting and Ground Water Use

Geologic/Groundwater Overview

The geologic and ground water conditions within York Region are variable, largely owing to the fact that the area has been glaciated several times in recent geologic history. There has been a great deal of study in the area allowing the geologic and ground water conditions to be reasonably well understood. In the Region there are five very broadly defined geologic/ground water settings:

- South Slope Till Plain
- Oak Ridges Moraine

- North Slope Till Plain
- · Schomberg Plains
- Holland Lowlands

Major Aquifers

Major aquifers occur throughout the York Region. These include both overburden and bedrock aquifers. Substantial quantities of ground water are available from the major overburden aquifers in the area. Municipal and domestic water supplies are provided from overburden aquifers. Lesser quantities of generally poorer quality water are available from bedrock aquifers throughout most of the Region.

Aquifer characteristics of the overburden fall into three broad areas based on physiographic and stratigraphic relationships. These are:

- · Oak Ridges Moraine;
- · South Slope; and
- North Slope.

Ground Water Use

Much of York Region, south of the Oak Ridges Moraine, is urban land which is serviced by water from Lake Ontario. Urban growth is expanding northward from the Metropolitan Toronto area. As this occurs, more communities are switching from traditional ground water supplies to Lake Ontario water. Major overburden aquifers in the South Slope aquifer complex are therefore gradually being replaced as a source of domestic water supply. However, the demand for municipal ground water supplies from the Oak Ridges Moraine and deep overburden aquifers within bedrock valleys are presently increasing for communities in the northern part of the Region (Oak Ridges, Aurora, Newmarket) as residential development continues to increase the demand for water.

Bedrock aquifers are not heavily utilized as a source of municipal or domestic water in the Region due to the abundance of overburden aquifers and the relatively poor aquifer characteristics of the bedrock. Exceptions to this occur where there is a shallow depth to bedrock and no alternative water supplies are available.

3.3.2 Surface Water and Surface Water Use

Drainage

The Region of York is situated in two major watersheds, namely:

- Lake Simcoe/Georgian Bay and
- Lake Ontario.

The drainage divide between these two major watersheds runs from east to west through the middle of the Region. The drainage divide parallels the Oak Ridges Moraine.

The northern half (approximately) of York drains northwest to the Lake Simcoe/Georgian Bay flow system. The major streams in this area are:

- Holland River
- Maskinoge River
- Black River and
- Pefferlaw Brook.

The southerly half (approximately) of York drains to Lake Ontario. The major streams in this area are:

- Humber River
- Don River
- Highland Creek
- · Rouge River and
- Duffin Creek.

The major surface water body in the Region is Lake Simcoe.

Stream Water Quality

Active water quality stations are located on rivers and streams in the York Region. These stations are part of the Provincial Water Quality Monitoring Network operated by the Ministry of Environment and Energy. In addition to routine data collection, many special studies have been undertaken on some watercourses including the Humber River, Don River, Holland River and Black River.

Water quality in streams in the area is generally impacted by both point source and diffuse source inputs including:

- · sewage treatment plant effluent;
- industrial discharges;
- urban land use;
- · transportation corridors; and
- agricultural land use.

Provincial water quality objectives are exceeded for several parameters at stations throughout the Region. Better water quality is likely to be found in the headwater areas of watercourses where point source inputs and urban land use are absent and agricultural intensity is low. Important fisheries occur in several streams throughout the area.

Lakes

Lake Simcoe has received attention in recent years, primarily as a result of impairment of water quality from agricultural activities. The Lake Simcoe Environmental Management Studies (Lake Simcoe Environmental Management Committee, 1985) found that the Lake is receiving an excessive supply of phosphorus which is contributing to eutrophication problems and identified various remedial measures that should be undertaken. The general water quality in the Lake is adequate for most recreational activities but localized problems occur.

Surface Water Use

Surface water in York Region is used for a wide variety of purposes including:

- aquatic life;
- recreation;
- · drinking water supply;
- industrial water;
- agriculture; and
- · waste assimilation.

3.3.3 Biological Characterization

Major rivers in the Region within the Lake Ontario drainage basin include: the Humber, Don and Rouge. Considerable effort has been expended in developing an anadromous salmonoid fishery in this area. Major watercourses in the Region within the Lake Simcoe drainage basin include: the Holland River, Black River and Pefferlaw Brook. These watercourses generally support warm-water fish populations. Agricultural land uses are prominent in the basins of the watercourses draining to Lake Simcoe.

The Oak Ridges Moraine is a prominent topographic feature in York Region which acts as a watershed divide between the Lake Ontario and Lake Simcoe drainages. The moraine is of biological significance because it contains large tracts of forest and it contributes baseflow to headwater areas of the cold and cool-water streams.

The southern part of the Region is within the Deciduous Forest Region. Plant communities having southern affinities are well represented, for example, in the valley of the Rouge River. The northern part of the study area is situated within the Great Lakes-St. Lawrence Forest Region.

The biology of most of the Region has been relatively well studied. Basin and Regional surveys have established the status of bird and plant species.

3.4 Peel

3.4.1 Geologic/Ground Water Setting and Ground Water Use

Geologic/Groundwater Overview

The geologic and ground water conditions in the Region of Peel are quite variable. Within the Region there are seven very broadly defined geologic/ground water settings. These settings are:

- Niagara Escarpment;
- Hillsburgh Sandhills;
- Guelph Drumlin Field;
- Oak Ridges Moraine;
- South Slope Till Plan;
- Peel Plain; and
- · Lake Iroquois Plain.

Major Aquifers

Major aquifers occur throughout the Region of Peel. These include both overburden and bedrock aquifers. Substantial quantities of ground water are available from the major bedrock and overburden aquifers in the area. Municipal and domestic water supplies are provided from bedrock and overburden aquifers. Peel Region has a complete hydrogeologic setting as a result of its diverse geological history. Generally, relatively permeable glacial deposits in the northern portion of the Region act as ground water recharge areas to overburden aquifers and the bedrock.

Peel Region has a complex hydrogeologic setting as a result of its diverse geological history. In general, relatively permeable glacial deposits (ice contact stratified drift) in the northern portion act as ground water recharge areas to overburden aquifers and the hedrock.

The Amabel bedrock formation in the northwestern corner of the Region is recharged where it is exposed on the surface or is overlain by a thin covering of glacial drift. It forms part of the Guelph - Amabel aquifer which is a major Regional high capacity aquifer, with yields of 0.76 to greater than 3.8 litres per second (10-50 gpm). The permeability of the aquifer is primarily due to chemical dissolution of dolomite along fractures and bedding planes. Shale bedrock to the east of the escarpment has poor ground water yield potential, generally less than 0.15 litres per second (2 gpm) but can reach 0.76 litres per second (10 gpm) if the shale is jointed and has calcareous lenses.

Overburden ground water yields of greater than 0.76 L/s (10 gpm) have been identified in sand and gravel deposits in glacial meltwater channels extending south from Orangeville, in and underlying the Brampton Esker, southwest and northeast of Brampton and in isolated areas throughout the Region. East of the escarpment in the northern half of the Region, ground water yields of 0.15 to 0.76 litres per second (2 to 10 gpm) are obtained from shallow deposits of sands and gravels interbedded with minor clay lenses. In the area north of the escarpment and the southern half of the Region, less permeable clay and till deposits provide yields of less than 0.15 to 0.76 litres per second (2 gpm).

Ground Water Use

Much of the southern portion of the Region of Peel is urban land which is serviced by water from Lake Ontario. Urban growth continues to expand northward from the built-up area (Mississauga) on Lake Ontario. As this growth occurs, communities will continue to switch from traditional ground water supplies to Lake Ontario water. Generally, the

municipalities in Peel Region located north of Brampton rely on ground water as the source of their domestic water supply.

3.4.2 Surface Water Characterization

Drainage

The Region of Peel is situated in two major watersheds, namely:

- · Lake Simcoe/Georgian Bay; and
- Lake Ontario.

The majority of Peel Region drains southeast to Lake Ontario. This represents the area south of the Oak Ridges Moraine (approximately).

The major streams in this area are:

- Humber River:
- Credit River;
- Etobicoke Creek; and
- Mimico Creek.

A very small area in the northern part of Peel Region (north of the Oak Ridges Moraine) drains to Georgian Bay and Lake Simcoe. There are no major streams for this drainage system in Peel Region. Surface water drains to the Nottawasaga River, Bailey Creek and Holland River, which are situated outside of the Region.

The major surface water body in the area is Lake Ontario.

Stream Water Quality

Water quality in streams in the Region is generally impacted by point source and diffuse source inputs including:

- industrial discharges;
- urban land use;

- transportation corridors; and
- · agricultural land use.

Provincial Water Quality Objectives are exceeded for several parameters at monitoring stations in the Region. Improved water quality is likely to be found in the head water areas of watercourses where point source inputs and urban land use are absent and agricultural intensity is low.

Lakes

Lake Ontario is the only major lake in the area. A great deal of study has been conducted on Lake Ontario due to its important role as a source of drinking water to communities along its shore and its high recreational value.

Surface Water Use

Surface water in the Region of Peel is used for a wide variety of purposes including:

- · aquatic life;
- recreation;
- drinking water supply;
- industrial water;
- agriculture; and
- · waste assimilation

Several major water uses occur along the Lake Ontario shoreline. These include intakes for municipalities and industries, and sewage plant outfalls.

3.4.3 Biological Characterization

Significant natural environment features exist in the Region of Peel. These natural environment features include:

- · provincial parks and Conservation Authority lands;
- hazard lands (as identified in official plans);
- environmentally significant areas;
- areas of natural and scientific interest (ANSI's-life and earth sciences);

- provincially and Regionally significant wetlands (Class 1-7);
- OMNR Agreement and Woodlot Improvement Act (WIA) forests;
- licensed pits and quarries;
- significant warm-water and cold-water watercourses.

The Region of Peel is located in the Great Lakes St. Lawrence Forest Region. Natural woody vegetation in this regime is characterized by eastern white and red pines, eastern hemlock and yellowbirch. The majority of the forested areas of the Region lie within Caledon reflecting the rural character of the Town. Extensive urban development has removed much of the large wooded areas in the City of Mississauga and to a lesser degree in the City of Brampton. In these areas, forest resources are generally restricted to scattered woodlots, ravines and environmentally protected areas. The forest management potential generally is low in Mississauga, low to moderate in the City of Brampton and moderate to high in the Town of Caledon. Similarly, important wildlife resource areas associated with valley lands, upland habitat (e.g. Niagara Escarpment) and ravines are more concentrated in the Town of Caledon. Important ravines are also associated with the Lake Ontario shoreline.

The cold-water headwaters of the Credit and Humber Rivers lie within the northern half of Caledon which has been identified by MNR as a cold-water stream zone. The Credit River from approximately Highway 403 to Lake Ontario, which has migratory salmonid runs, is a fish sanctuary.

4. ASSESSMENT AND EVALUATION OF THE 3RS SYSTEMS

4.1 Introduction

This chapter outlines the assessment and evaluation of the alternative 3Rs systems, undertaken for each Region, with respect to the natural environment. The assessment and evaluation of the systems includes a net effects assessment of the alternative systems and evaluating the systems for each Region to identify a ranking of systems with respect to the natural environment.

4.2 Approach

A total of six Regionally based residential waste 3Rs systems were developed by the study team for the Regions of Durham, Metro Toronto, York and Peel. Six alternative 3Rs systems were also developed for the institutional, commercial and industrial (IC&I) sectors, but for the GTA as a whole. This was due to the large overlap between the Regions for waste management components serving the IC&I sector. The residential and IC&I systems are described in detail in the EA Input Document.

The net effects analysis of the residential systems was not specifically undertaken for each Region. Due to the large overlap of components for the six systems between the four Regions, the analysis was completed at a generic level of detail. These generic systems included all potential 3Rs components for a particular Regional system. Potential effects, mitigation and net effects were developed for each component category within a system. The component categories included a group of components with similar characteristics. This generic analysis was completed for each indicator of the three criteria within the Natural Environment Criteria Group.

The generic system net effects by component were then reviewed with respect to the specific Regional 3Rs system description. The purpose of this step was to complete a net effects analysis for each individual system for each Region. The specific Regional system descriptions including the identification of components, allowed the corresponding net effects to be identified from the generic system net effects. The net effects for each component category of a particular system were then combined for each criteria indicator, into system net effects by indicator.

The system net effects for each indicator of a criterion were then combined. The resultant system net effects by criterion were used to complete the evaluation of systems. The

advantages/disadvantages of each system, relative to the other systems, were also developed by criterion.

Once the net effects assessment was completed for each 3Rs system within a Region, the six systems were then evaluated. By comparing the relative advantages and disadvantages between the six systems, the systems were ranked for each of the three natural environment criteria. The systems were ranked from highest to lowest for each criteria.

The system rankings for each criteria were then considered in conjunction with a ranking of the three natural environment criteria. The relative differences and trade-offs among the systems were examined based on the importance of the criteria. The result was the development of the overall system rankings for each Region within the Natural Environment Criteria Group.

A similar net effects assessment and evaluation of alternative 3Rs systems was completed for the IC&I sector. However, generic systems and net effects were not developed on a Regional basis. Rather, the IC&I systems were developed for the GTA as a whole. Consequently, the system net effects tables by component completed for the IC&I sector are for the entire GTA and were not completed in a generic manner.

4.3 Net Effects Analysis

The six generic residential and the six IC&I 3Rs systems are described in the EA Input Document. This includes a description of the components and component categories in each system.

The residential systems are: Existing, Existing/Committed, Direct Cost, Expanded Blue Box, Wet/Dry and Mixed Waste Processing. The IC&I systems are: Existing, Existing/Committed, Extended 3Rs Regulations, Expanded 3Rs Regulations with Organics and Processing of All IC&I Waste.

The generic system net effects tables by component for the residential sector are presented in Schedule B. The tables contain an assessment of systems for each indicator of the three criteria. The system net effects tables for each Region are presented in Schedule C.

The system net effects tables by component for the IC&I sector are presented in Schedule D. The IC&I system net effects tables are contained in Schedule E.

4.4 Evaluation

4.4.1 Introduction

The evaluation of systems was completed for residential 3Rs systems within the four Regions and for the IC&I systems in the GTA. These evaluations were completed based on the system net effects tables discussed in the previous section and presented in Schedules C and E, and also on the ranking of the natural environment criteria. The ranking of the criteria and the evaluations follows.

4.4.2 Criteria Ranking

The Natural Environment Criteria Group contains three criteria. To assist in identifying a ranking of the 3Rs systems for this criteria group, the individual criteria were ranked. This criteria ranking was completed on the basis of the level of importance of the criteria relative to the other criteria. In order to rank the criteria, consideration was given to the magnitude of effects, duration of effects, significance of effects, certainty of effects and the relative difference among alternative systems being examined for the four Regions and for the GTA overall.

Two categories of importance were identified for the Natural Environment Criteria Group. The criteria "potential for effects to aquatic systems including surface water and ground water resources" and "potential for effects to atmospheric environment" were considered to be equal and the most important. These two criteria were given the highest ranking since potential effects from the 3Rs systems may be significant loss/removal or disruption of aquatic systems and resources, and exceed established regulatory standards with respect to discharges of contaminants to the atmosphere. The duration of these potential effects may also be throughout the life of the alternative. However, the occurrence of the effects is expected to be intermittent and any effects may be reduced by the mitigative measures.

The criterion "potential for effects to terrestrial systems and resources" was ranked lowest since the magnitude of any effects possible from an alternative system are not expected to result in the significant loss/removal or disruption of terrestrial systems and resources. The potential effects which may occur are expected to occur during the short-term. There is also a high potential to mitigate any effects that are predicted to occur. Mitigative measures include following an appropriate site selection process for facilities, the installation of design features to prevent or restrict discharges to the environment, and implementing contingency measures in the event of an accident.

The criteria ranking for the Natural Environment Criteria Group and the rationale for the ranking is provided in Table 4.1.

TABLE 4.1

NATURAL ENVIRONMENT CRITERIA GROUP

CRITERIA RANKING

	NATURAL ENVIRONMENT							
Criterion	Rank Order ¹	Rationale						
Criterion 1								
Potential for effects to terrestrial systems and resources	3	This criterion is ranked the lowest since the magnitude of effects possible for the range of systems are expected to be within accepted standards. Most effects are unlikely to occur or are expected to occur during the short-term. There is a high potential to mitigate any potential effects by proper siting of new facilities.						
Criterion 2								
Potential for effects to aquatic systems including surface water and ground water resources	1	This criterion is ranked the highest since potential effects may be significant exceeding accepted standards. Potential effects may occur throughout the life of the option. The occurrence of the effects is expected to be intermittent. Mitigative measures may reduce effects but will not eliminate them.						
Criterion 3								
Potential for effects to atmospheric environment	1	This criterion is ranked the highest since potential effects may be significant exceeding accepted standards. Potential effects may occur throughout the life of the option. The occurrence of the effects is expected to be intermittent. Mitigative measures may reduce effects but will not eliminate them.						

^{1.} A ranking of "1" is to represent the criterion considered to be the most important.

4.4.3 Region of Durham Systems Ranking

4.4.3.1 Ranking of Systems by Criterion

In order to identify a ranking of the 3Rs systems for Durham Region, the system alternatives were first ranked by criterion within the Natural Environment Criteria Group. The system rankings by criterion were based on the "system net effects by criterion" and "advantages/disadvantages by criterion" documented in the individual system summary net effects tables contained in Schedule C. The system rankings for the three natural environment criteria are discussed below. The systems rankings, by criterion, are summarized in Table 4.2.

For the purpose of the systems evaluation with respect to the natural environment, Systems 6A and 6B were considered to be the same. These system evaluations are combined and referred to as System 6.

Potential for Effects to Terrestrial Systems and Resources

Effects to terrestrial systems and resources were predicted to occur as a result of siting new 3Rs facilities and due to discharges of wastes or potentially harmful materials as a result of some accident or upset condition. The potential effects due to accidents was expected to be the same for all systems. The existing (System 1) and Existing/Committed (System 2) systems have all the necessary facilities in place. The required expansion or improvements to existing facilities for System 2 is not expected to result in the loss/removal or disruption of terrestrial systems and resources. These two systems were considered equal and ranked highest. System 3 (Direct Cost) does not require any new facilities. However, under this system there is a higher likelihood of illegal dumping of wastes occurring, making it ranked lower than Systems 1 and 2. Systems 4, 5, and 6 (Expanded Blue Box, Wet/Dry and Mixed Waste Processing, respectively) all require expanded or additional facilities to those which already exist. It is expected that potential effects to terrestrial systems and resources can be effectively mitigated. This includes the siting of new facilities in areas with compatible land uses (i.e. industrial zoned areas). System 4 requires a single new MRF and was ranked second lowest. Similarly, System 6 requires a new Mixed Waste Processing and compost facility at one location. This system was also ranked second lowest since only one new facility was required. The Wet/Dry system (System 5) was ranked lowest since a new MRF and new compost facilities would be required. This system has the highest potential for the loss/removal or disruption of terrestrial systems and resources.

REGION OF DURHAM NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT

Goal/Criteria Group/Criteria	System 1 Existing	System 2 Existing/Committed	System 3 Direct Cost	System 4 Expanded Blue Box	System 5 Wet/Dry	System 6 (A + B) Mixed Waste Processing
IMPACT			,			
Natural	Highest ranked with System 2	Highest ranked with System 1	Third lowest ranked	Third highest ranked	Second lowest ranked	Lowest ranked
Potential for effects to terrestrial systems	Highest ranked due to:	Highest ranked due to:	Third highest ranked due to:	Second lowest ranked due to:	Lowest ranked due to:	Second lowest ranked due to:
and resources	necessary facilities already existing potential effects are due to accidents	necessary facilities already exist potential effects are due to accidents	necessary facilities already exist reported exist to accidents. Illegal dumping of wastes is anticipated and may result in effects	potential effects due to siting new MRF potential effects due to accidents	· potential effects due to siting of new MRF and new compost facilities repential effects due to accidents	potential effects due to siting new mixed waste processing and compositing facility potential effects due to accidents
Potential for effects to aquatic systems	Highest ranked due to:	Highest ranked due to:	Third lowest ranked due to:	Third highest ranked due to:	Lowest ranked due to:	Lowest ranked due to:
including surface and ground water resources	necessary facilities already exist potential effects due to dischanges from existing facilities	necessary facilities already exist potential effects due to discharges from existing facilities	already exist already exist potential effects due to discharges from existing facilities iillegal dumping of wastes is anticipated and may result in effects	opotential effects due to discharge from existing facilities facilities operatial effects due to siting new MRF but no additional discharges	or potential effects due to discharges from existing facilities potential effects due to siting new MRF and compost facilities and discharges from new compost facility	opotential effects due to discharges from existing facilities protential effects due to sting mixed waste processing/compositie facility and discharges from new facility
Potential for effects to the atmospheric	Highest ranked due to:	Highest ranked due to:	Highest ranked due to:	Highest ranked due to:	Second lowest ranked due to:	Lowest ranked due to:
environnent	no processing and composting of mixed wastes or wet wastes emissions to amosphere, emissions to amosphere, dobust, bioacrosols and gases	no processing and composing of mixed wastes or wet wastes en weit wastes entissions to amosphere include dast, exhaust, colours, bioaerusols and gases	no processing and compositing of mixed wates or wet wastes emissions to amosphere include dust, exhaust, odours, bioacrosols and gases	no processing and compositing of mixed wastes or wet wastes emissions to amosphere include dust, exhaust, octours, bioacrosols and gases	atmosphere include dast, exhaust, colours, bioacrosols and gases additional emissions from wet waste composting dependant on compost process	emissions to atmosphere include dust, exhaust, ocours, bioacrosols and gases additonal emissions from mixed waste processing and composting

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Potential effects to aquatic systems were expected to occur for reasons similar to effects on terrestrial systems and resources (i.e. location of facility, discharges from the facility, accidents). However, additional effects to aquatic systems may occur due to discharges from 3Rs facilities. These discharges are expected to be in the form of leachate or contaminated surface water runoff from central compost facilities. The potential for effects due to discharges from existing 3Rs facilities was considered to be equal for all systems. Since the necessary facilities already exist for Systems 1 and 2, these systems were ranked equal and highest. No additional effects were expected due to the expansion of the existing MRF in System 2. System 4 was ranked third highest, ahead of System 3. The Expanded Blue Box system (System 4) requires a new MRF but no new discharges are expected since only dry recyclable materials are processed. System 3 (Direct Cost) does not require a new facility but it is anticipated that illegal dumping of wastes will occur as a result of this system. This dumping of wastes and its potential effects on aquatic systems make it ranked lower. Systems 5 and 6 were considered equal and ranked lowest. Both systems require new 3Rs facilities, including central compost facilities. The potential effects on aquatic systems from these new facilities were expected to be greater than any other system.

Potential for Effects to the Atmospheric Environment

All six system alternatives were expected to have emissions to the atmosphere. These emissions include dust, odours, and gases generated at MRFs and compost facilities, with dust and exhaust emissions generated by waste collection vehicles. differentiation between systems based on these emissions. Emissions to the atmosphere are reduced by such measures as following proper operating procedures at the facility, installation of emission controls, regular facility cleaning and vehicle maintenance. The potential for effects to the atmospheric environment from emissions was expected to be greater if wet waste (household organic) or mixed waste was being processed and/or composted at centralized facilities in large volumes. System 1 to 4 do not include the management of wet waste or mixed waste. These four systems were considered equal and ranked highest. System 5 includes the composting of wet waste while System 6 includes Mixed Waste Processing and composting. Due to the different nature of the two processes, with wet waste composting likely to be done using in-vessel technology and Mixed Waste Processing being open to the atmosphere (i.e. windrow technology), the potential effects of System 6 were considered to be the greatest and the system was ranked lowest.

4.4.3.2 Overall System Ranking

By considering the ranking of systems by criterion and the criteria rankings together, an overall system ranking can be completed for the Natural Environment Criteria Group. The Existing and Existing/Committed systems were ranked highest for each of the three criteria. As a result, these systems were ranked highest overall for the Natural Environment Criteria Group. System 4 was ranked second highest. This system was ranked lower than Systems 1 and 2 due to potential effects to terrestrial systems and resources, and aquatic systems and water resources from siting a new MRF and central compost facility. System 3, although requiring the same new facilities, was ranked lower than Systems 1, 2 and 4, and was ranked third lowest overall. The potential effects on terrestrial systems and aquatic systems from illegal dumping of wastes result in the lower ranking.

The Wet/Dry (System 5) and Mixed Waste Processing (System 6) systems were the second lowest and lowest ranked systems for all three criteria. System 6, Mixed Waste Processing, was the lowest ranked system overall. Potential effects to the atmospheric environment from Mixed Waste Processing (System 6) were considered to be greater than for System 5. The potential effects for the other criteria were considered equal for these two systems.

4.4.4 Metro Toronto Systems Ranking

4.4.4.1 Ranking of Systems by Criterion

The 3Rs systems for Metro Toronto were ranked by initially ranking the six system alternatives by criterion within the Natural Environment Criteria Group. The system rankings by criterion were based on the "system net effects by criterion" and "advantages/disadvantages by criterion" documented in the individual system summary net effects tables for the Region of Metro Toronto. These tables are contained in Schedule C. The system rankings for each of the three natural environment criteria are discussed below. The system rankings, by criterion, are summarized in Table 4.3.

When evaluating Systems 6A and 6B, these systems were considered to be the same with respect to the natural environment. These systems were combined and referred to as System 6 for the evaluation.

TABLE 4.3

METRO TORONTO NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT

System 6 (A + B) Mixed Waste Processing	I mine maked	DONIEL ISMOT	Second highest ranked due to: - potential effects due to siting new mixed waste processing and composing facility composing facility accidents	Lowest ranked due to: potential effects due to discharges from existing facilities potential effects due to siting mixed waste processing/composing facility and discharges from new mixed waste facility.
System 5 Wet/Dry	Third longer seed of		Second highest ranked due to: potential effects due to simp of one to two new MREs and new compost facility personnial effects due to accidents	Second highest ranked due to: potential effects due to sing one to two new MRFs and sing new compost facility revealed and the sing one of secharges from existing compost facilities and discharges from new compost facilities and discharges from new compost facility
System 4 Expanded Blue Box	A training to the state of the	System 2	Second highest ranked due to: potential effects due to situe new central compost facility and one to two new MRFs potential effects due to accidents accidents	Second highest ranked due to potential effects due to siting new central compost facility and one two new MRFs and the composite fefects due to discharges from existing and new compositing facilities in-vessel facility is in-vessel facility.
System 3 Direct Cost		Second lowest ranked	Lowest ranked due to: potential effects due to sing new central compost facility and one to two new MRFs potential effects are due to accidents ingular likelihood of illegal dumping of wastes is amoiptaed and may result in effects	Lowest ranked due to: potential effects due to siting new central compost facility and one to two new MRFs and the two new MRFs facilities and new compost facilities and new compost facilities and new central compost facility in vessel facility is in-vessel facility in higher likelihood of higher likelihood of wastes is anticipated and may result in effects
System 2 Existing/Committed		Second highest ranked with System 4	Second highest tranked due to: potential effects due to situe, new central compost facility and one to two new MRFs potential effects are due to accidents	Second highest ranked due to: potential effects due to siting new central compost facility and one to two new MRFs or potential effects due to discharges from existing facilities and new compost facility new central compost facility is in-vessel facility is in-vessel.
System 1 Existing		Highest ranked	Highest ranked due to: - necessary facilities already existing potential effects are due to accidents	Highest ranked due to: necessary facilities already exist already exist potential effects due to discharge from existing facilities
Goal/Criteria Group/Criteria	IMPACT	Natural	Potential for effects to terrestrial systems and resources	Potential for effects to aquatic systems including surface resources

TABLE 4.3

METRO TORONTO

NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT

(continued)

System 6 (A + B) Mixed Waste Processing	Lowest ranked due to: emissions to atmosphere include dust, exhaust, odours, bioacrosols and	gases additional emissions from mixed waste processing and composting
System 5 Wet/Dry	Second lowest ranked due to: to: c:	bioacrosols and gases composting of wet wastes at in-vessel facility additional emissions from increased wet waste composting
System 4 Expanded Blue Box	Highest ranked due to: composting of wet wastes at in-vessel facility	emissions to atmosphere include dust, exhaust, odours, bioserosols and gases
System 3 Direct Cost	Highest ranked due to: composting of wet wastes at in-vessel facility	e emissions to atmosphere include dust, exhaust, odours, bioacrosols and gases
System 2 Existing/Committed	Highest ranked due to: composting of wet wastes at in-vessel	e emissions to armosphere include dust, exhaust, odours, bioaerosols and gases
System 1 Existing	团 .	waters or war waster crimissions to atmosphere include dust, exhaust, odours, bioaerosols and gases
Goal/Criteria Group/Criteria	Potential for effects to the atmospheric environment	

Potential for Effects to Terrestrial Systems and Resources

Effects to terrestrial systems and resources are predicted to occur as a result of siting new 3Rs facilities and due to discharges of wastes or potentially harmful materials as a result of some accident or upset conditions. The potential for effects due to accidents was expected to be the same for all six systems. System 1, the Existing system, has all of the required facilities in place. Potential effects are expected only as a result of accidents. The Existing system was ranked highest for this criterion. The Existing/Committed, Expanded Blue Box, Wet/Dry and Mixed Waste Processing systems (Systems 2, 4, 5 and 6, respectively) were considered equal and each ranked second highest. Systems 2, 4 and 5 all include the same new 3Rs facilities, resulting in similar effects to terrestrial systems and resources for the systems. The new facilities include a central compost facility and one to two new MRFs. System 6 does not include the compost facility and MRFs, but includes a new Mixed Waste Processing and composting facility. Potential effects are due to siting this facility and are expected to be similar to the effects of Systems 2, 4 and 5.

System 3, the Direct Cost system, also includes the same new 3Rs facilities as are required for Systems 2, 4 and 5. However, this system is ranked lower due to the higher likelihood of illegal dumping of wastes and its resulting effects. The Direct Cost system was the lowest ranked system in terms of potential for effects to terrestrial systems and resources.

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Potential effects to aquatic systems and water resources were expected due to facility location, discharges from a facility and accidents. Leachate or contaminated surface water runoff from central compost facilities was expected to result in the most significant effects. All systems were considered equal with respect to effects as a result of discharges from existing facilities. System 1 was ranked highest since it has all facilities in place. Systems 2, 4 and 5 were ranked equally and second highest. These three systems require the same new 3Rs facilities. This includes a new central compost facility and one to two new MRFs. Since the compost facility is an in-vessel facility potential effects due to discharges are expected to be minimal.

System 3 and System 6 were both ranked lowest. Direct Cost system has the same new facility requirements as Systems 2, 4 and 5. However, due to the higher likelihood of illegal dumping of wastes in the Direct Cost system, the system was ranked lower. System 6 requires only a new Mixed Waste Processing facility. The potential for effects

due to discharges from this facility was considered to be greater than those facilities required by the other system. This is since the central compost facility required by the other systems is an in-vessel facility.

Potential Effects to the Atmospheric Environment

The six system alternatives were expected to have emissions to the atmosphere. These emissions include dust, odours, bioaerosols and gases generated at MRFs and compost facilities, with dust and exhaust emissions generated by waste collection vehicles. Emissions to the atmosphere are reduced by such measures as following proper operating procedures at the facility, installation of emission controls, regular facility cleaning and vehicle maintenance. The potential for effects to the atmosphere from emissions was expected to be greater if wet waste (household organic) or mixed waste was being processed and/or composted at centralized facilities in large volumes. System 1 does not include the management of wet or mixed wastes. Systems 2, 3 and 4 include the composting of a small amount of wet wastes annually at an in-vessel compost facility. Due to the small quantities and type of facility, no quantifiable difference in emissions was expected for these systems, relative to System 1. These four systems were equally ranked as highest.

The Wet/Dry system (System 5) was ranked second lowest of the systems. This system relies on an increased level of wet waste composting. As a result additional emissions are expected. System 6 was ranked lowest. This system includes the processing and composting of mixed wastes. This system is lowest ranked due to the nature of the wastes being managed and since the processing and composting of wastes is less controlled than at an in-vessel compost facility.

4.4.4.2 Overall System Ranking

Combining the ranking of systems by criterion and the criteria rankings allows an overall system ranking to be completed for the Natural Environment Criteria Group. For each of the three criteria, the Existing system was ranked highest. System 1 was the highest ranked system overall. Systems 2 and 4 had the same ranking for each of the three criteria. These two systems were both ranked second highest. Systems 2 and 4 were ranked lower than System 1 due to potential effects to terrestrial systems and aquatic systems as a result of siting new 3Rs facilities and discharges from the new compost facility. System 5 (Wet/Dry) was ranked only slightly lower than Systems 2 and 4, and

third lowest overall. This lower ranking was due to the potential for effects to the atmospheric environment from an increase in the amount of wet waste composted.

System 3 (Direct Cost) was ranked second lowest of the systems overall. The Direct Cost system requires the same new 3Rs facilities as the Existing/Committed and Expanded Blue Box systems. The higher likelihood of illegal dumping of wastes occurring in the Direct Cost system, and its effects to terrestrial and aquatic systems, is the reason for the lower ranking. When compared to the Wet/Dry system, Direct Cost is also ranked lower. Both System 3 and 5 require the same new facilities. However, the potential effects to terrestrial and aquatic systems as a result of illegal dumping of wastes within System 3 are expected to be more significant than the increase in emissions to the atmosphere from increased wet waste composting in System 5. Wet wastes are composted in an in-vessel facility.

System 6 was ranked lowest overall for the six systems. This system was expected to have the greatest potential for effects to the atmosphere from Mixed Waste Processing and composting. Similarly, potential effects to aquatic systems were expected to be the greatest of all systems due to siting of the mixed waste facility and discharges from the facility.

4.4.5 Region of York Systems Ranking

4.4.5.1 Ranking of Systems by Criterion

A ranking of the 3Rs systems for York Region was identified by initially ranking the system alternatives by criterion within the Natural Environment Criteria Group. The system rankings by criterion were based on the "system net effects by criterion" and "advantages/disadvantages by criterion" documented in the Region of York's individual system summary net effects tables contained Schedule C. The system rankings for the three natural environment criteria are discussed below. The system rankings, by criterion, are summarized in Table 4.4.

For the purpose of the systems evaluation with respect to the natural environment, Systems 6A and 6B were considered to be the same. These system evaluations are combined and referred to as System 6.

TABLE 4.4

REGION OF YORK NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT

Second lowest ranked Second lowest ranked due to: - potential effects due to siting two new central compost facilities e potential effects are due to accidents it whigher lifetipod of	Second lowest ranked S Second lowest ranked due S S Second lowest ranked due S I S S S S S S S S S S S S S S S S S	F F9 .	3 3 .
Highest ranked Second highest ranked Second lowest ranked with System 4 Highest ranked due to: Second highest ranked Second lowest ranked the to: Second highest ranked to the total character of the total c	Second lowest ranked Second lowest ranked due to: pointial effects due to sing two new central compost facilities compost facilities pomental effects are due to accidents		3 2 .
Highest ranked due to: Second highest ranked due due to: necessary facilities potential effects due to siting two new central compost facilities potential effects are due compost facilities potential effects are due potential effects are due potential effects are due compost facilities potential effects are due potential effects are due compost facilities potential effects are due compost facilities repotential effects are due compost facilities potential effects are due compost facilities repotential effects are due compost facilities repot	Second lowest ranked due to: potential effects due to siting two new central compost facilities potential effects are due to accidents		<u> </u>
unega dumpung or wastes is anticipated and may result in effects rew MRF and in-vessel compost facility being develored		required) and two new compost facilities compost facilities a potential effects due to accident in rew MRF and in-vessel compost facility being developed	siting two new central compost facilities and new mixed waste processing and composing facility potential effects due to acidente acidente or new MRF and in-vessel compost facility being developed

TABLE 4.4

REGION OF YORK NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT (continued)

System 6 (A + B) Mixed Waste Processing	Lowest ranked due to: to potential effects due to discharges from existing facilities pourable effects due to say and mixed waste processing/compositing processing/composition proces	Lowest ranked due to: emissions to armosphere include dust, exhaust, codours, bioaerosols and grees some wet wastes composide at in-vessel composide at in-vessel composide at in-vessel composide at in-vessel processing and compositing
System 5 Wet/Dry	Third lowest ranked due to: potential effects due to discharges from existing facilities potential effects due to sing new MRE (if required) and compost facilities and discharges from new compost facilities and in-vessel compost facility being developed	Second lowest ranked due Lowest ranked due to: - emissions to atmosp amosphere include dust, echanic dours, bioaerosols and gases compositing of wet compositing of wet compositing of wet compositing of wet compositing additional emissions from increased wet processing and compositing additional emissions from increased wet processing and compositing compositing
System 4 Expanded Blue Box	Second highest tranked due to: potential effects due to situe, we certral compost facilities to potential effects due to discharge from esisting and new composting facilities facilities in new MRP and in-vessel compost facility being developed	Highest ranked due to: - composting of wet wastes at in-vessel compost facility - critisions to atmosphere include dust, exhaust, odours, boacrosols and gaees
System 3 Direct Cost	Second lowest ranked due to: potential effects due to sing, two ventral compost facilities potential effects due to discharges from existing facilities and new compost facilities new MRP and in-sesel compost facility being developed higher likelithod of lillegal dumping of wastes is anticipated and may result in effects	Highest ranked due to: omposting of wet waste at in-vessel compost facility ompost facility or arissions to atmosphere include dust, exhaust, odours, bioacrosols and guees.
System 2 Existing/Committed	Second highest ranked due to: potential effects due to siting new central compost facilities. potential effects due to dicharges from existing facilities and existing facilities and mew MRF and in-vessel compost facilities compost facilities developed.	Highest ranked due to: - composting of wet wastes alt in-vessel compost facility - emissions to amosphere include dust, exhaust, odours, bioaerussols and gases
System 1 Existing	Highest ranked due to: necessary facilities already exist potential effects due to discharges from existing facilities	Highest ranked due to: no processing and composing of mixed wastes or wet wastes craissions to atmosphere include dust, exhaust, odours, broacrosols and gases
Goal/Criteria Group/Criteria	Potential for effects to aquaic systems including surface and ground water resources	Potential for effects to the atmospheric environment

Potential for Effects to Terrestrial Systems and Resources

Effects to terrestrial systems and resources were predicted to occur as a result of siting new 3Rs facilities and due to discharges of wastes or potentially harmful materials as a result of some accident or upset condition. The potential effects due to accidents was expected to be the same for all systems. The Existing system (System 1) has all of the required facilities in place. Potential effects are expected only as a result of accidents. The Existing system was highest ranked. The Existing/Committed and Expanded Blue Box systems (Systems 2 and 4, respectively) require 3Rs facilities in addition to those which already exist. These facilities include a new MRF and in-vessel compost facility which are already being developed as part of System 2. Two additional central compost facilities are also part of these two systems. By siting these facilities in areas with compatible land uses (i.e. landfill sites, industrial areas) it is anticipated that potential effects to terrestrial systems and resources can be effectively mitigated. Systems 2 and 4 were considered to be both ranked second highest.

The Direct Cost (System 3) and Wet/Dry (System 5) systems both require the same new facilities as Systems 2 and 4. However, additional effects are anticipated for System 3 due to a higher likelihood of illegal dumping of wastes occurring. System 5 may require a new MRF to process a larger quantity of dry recyclables if the MRF now being developed cannot be expanded. The potential effects for System 5 are expected to be less than for System 3. If a new MRF is required, the potential effects can largely be mitigated through an appropriate site selection process. The illegal dumping of wastes is expected to occur during the operating life of the Direct Cost system, making this system ranked lower than System 5.

System 6 (Mixed Waste Processing) requires a new Mixed Waste Processing and composting facility in addition to the same new facilities identified for the Existing/Committed system. Due to the area typically required for a mixed waste facility, System 6 is predicted to have the highest potential for effects to terrestrial systems and resources.

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Similar to effects on terrestrial systems and resources, potential effects to aquatic systems were expected due to facility location, discharges from a facility and accidents. The largest potential for effects was expected to be as result of leachate or contaminated surface water runoff from central compost facilities. All systems were considered equal

with respect to effects as a result of discharges from existing facilities. System 1, for which all the facilities exist, was ranked highest. Systems 2 and 4 both have a new MRF and in-vessel compost facility. These facilities are presently being developed. In addition, these systems also include two more central compost facilities. Systems 2 and 4 were both ranked second highest.

The Direct Cost (System 3) and Wet/Dry (System 5) systems include the same new facilities as Systems 2 and 4. System 5 may require a new MRF if the facility presently being developed cannot be expanded. The effects of a new or expanded MRF on aquatic systems are not expected to be significant since only dry recyclables are processed. The likelihood of illegal dumping of wastes as a result of a Direct Cost system will result in increased effects to aquatic systems and water resources. System 3 was ranked lower than System 5 and second lowest for this criterion.

System 6 requires a new Mixed Waste Processing facility in addition to the new facilities common to Systems 2 to 5. The potential effects on aquatic systems from this system were anticipated to be greater than any other system.

Potential Effects to the Atmospheric Environment

All six system alternatives were expected to have emissions to the atmosphere. These emissions include dust, bioaerosols, odours and gases generated at MRFs and compost facilities, with dust and exhaust emissions generated by waste collection vehicles. There was no differentiation between systems based on these emissions. Emissions to the atmosphere are reduced by such measures as following proper operating procedures of the facility, installation of emission controls, regular facility cleaning and vehicle maintenance. The potential for effects to the atmospheric environment from emissions was expected to be greater if wet waste (household organic) or mixed waste was being processed and/or composted at centralized facilities in large volumes. System 1 does not include the management of wet wastes or mixed wastes. Systems 2, 3 and 4 include the composting of a small annual quantity of wet wastes at an in-vessel compost facility. Due to the type of facility and small quantities, no appreciable difference in emissions to the atmosphere is expected between Systems 1 to 4. These systems were all ranked highest, The Wet/Dry system (System 5) was ranked lower than these systems due to the substantive increase in the quantities of wet waste composted. The Mixed Waste Processing system (System 6) was ranked lowest due to the nature of the wastes and the processing method being typically open to the surrounding atmosphere.

4.4.5.2 Overall System Ranking

When considering the ranking of systems by criterion and the criteria rankings together, an overall system ranking can be completed for the Natural Environment Criteria Group. The Existing system (System 1) was ranked highest for each of the three criteria. As a result, this system was ranked highest ranked overall. Systems 2 and 4 were ranked equal and second highest. These systems were ranked lower than System 1 due to potential effects to terrestrial systems and resources, and aquatic systems and water resources, from siting new 3Rs facilities and potential discharges for existing and new compost facilities. System 5 was ranked slightly lower than Systems 2 and 4 and third lowest overall. This system may require a MRF in addition to the same facilities included in Systems 2 and 4. This new facility may result in additional effects to both terrestrial and aquatic systems.

The Direct Cost system (System 3) was ranked second lowest of the systems. This system requires the same new 3Rs facilities as Systems 2 and 4. However, this Direct Cost system has a higher likelihood of illegal dumping of wastes, resulting in additional effects to terrestrial systems and aquatic systems. The Direct Cost system was also ranked lower than Wet/Dry since the effects of illegal dumping were considered to be more significant than the potential effects of another new MRF (if required) and the increased emissions to the atmosphere from increased wet waste composting. Wet waste is composted in an in-vessel facility for both systems but at increased quantities in System 5.

System 6 was ranked lowest for all three criteria and consequently was ranked lowest overall. This system required the greatest number of new 3Rs facilities resulting in a higher potential for effects to terrestrial systems and aquatic systems. Potential effects to the atmospheric environment from Mixed Waste Processing were also considered to be greater than emissions from any of the other five systems.

4.4.6 Region of Peel Systems Ranking

4.4.6.1 Ranking of Systems by Criterion

In order to identify a ranking of the 3Rs systems for the Region of Peel, the six system alternatives were first ranked by criterion within the Natural Environment Criteria Group. The systems rankings by criterion were based on the "system net effects by criterion" and "advantages/disadvantages by criterion" documented in the individual system summary net effects tables for Peel Region contained in Schedule C. The system rankings for the three

natural environment criteria are discussed below. The system rankings, by criterion, are summarized in Table 4.5.

For the purpose of the systems evaluation with respect to the natural environment, Systems 6A and 6B were considered to be the same. These system evaluations are combined and referred to as System 6.

Potential for Effects to Terrestrial Systems and Resources

Effects to terrestrial systems and resources were predicted to occur as a result of siting new 3Rs facilities and due to discharges of wastes or potentially harmful materials as a result of some accident or upset condition. The potential effects due to accidents was expected to be the same for all systems. The Existing system (System 1) has all of the necessary facilities in place. Potential effects are expected only as a result of accidents. This system was ranked highest. Systems 2 and 4 (Existing/Committed and Expanded Blue Box, respectively) require additional facilities to those which already exist. These facilities are a new MRF and an in-vessel compost facility. It is expected that potential effects to terrestrial systems and resources can be effectively mitigated. This includes the siting of these new facilities in areas with compatible land uses (i.e. industrial zoned areas). These two systems were ranked equal and second highest. System 3 (Direct Cost) requires the same new facilities as Systems 2 and 4. However, under the Direct Cost system there is a higher likelihood of illegal dumping of wastes occurring, making it slightly lower ranked. The potential effects of illegal dumping are expected to be less than the effects associated with the siting of an additional facility in Systems 5 and 6. Systems 5 and 6 were ranked equal and lowest. The Wet/Dry system (System 5) requires a new central compost facility in addition to the new MRF and compost facility identified for the other systems. System 6 requires a new Mixed Waste Processing and compost facility, in addition to the new MRF and central compost facility required by the other systems. These systems were predicted to have the highest potential for the loss/removal or disruption of terrestrial systems and resources.

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Potential effects to aquatic systems were expected to occur for reasons similar to effects on terrestrial systems and resources (i.e. location of facility, discharges from the facility, accidents). However, additional effects to aquatic systems may occur due to discharges

REGION OF PEEL NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT

System 6 (A + B) Mixed Waste Processing		Lowest ranked	Lowest ranked due to: potential effects due to siting new MRF, central compost facility and mixed waste processing and composting facility potential effects due to accidents	Lowest ranked due to: potential effects due to discharges from existing facilities to potential effects due to sinting MRF. compost facility, and mixed waste processing formposting facility and discharges from new compost and mixed waste facilities
System 5 Wet/Dry		Second lowest ranked	Lowest ranked due to: potential effects due to siting of new MRF and new compost facilities rew compost facilities accidents	Lowest ranked due to: openial effects due to discharges from discharges from existing facilities or potential effects due to siting near MRP and compost facilities and discharges from new compost facilities
System 4 Expanded Blue Box		Second highest ranked with Second lowest ranked System 2	Second highest ranked due to: potential effects due to siting new central compost facility and MRF potential effects due to accidents	Second highest ranked due to: potential effects due to siting new central compost lacility and MRF when effects due to discharges from existing and new composting facilities
System 3 Direct Cost		Third lowest ranked	Second lowest ranked due to: potential effects due to siting new central compost facility and MRF representation of the conscience of accidents of the particular of the constitution of illegal dumping of wastes is amicipated and may result in effects	Third lowest ranked due to: potential effects due to siting new central compost facility and MRP potential effects due to dicharges from existing facilities and new compost facility higher likelihood of illegal dumping of wastes is anticipated and may result in effects
System 2 Existing/Committed		Second highest ranked with System 4	Second highest ranked due to: potential effects due to siting new central compost facility and MRF potential effects are due to accidents	Second highest ranked due to: potential effects due to siting new central compost facility and MRF potential effects due to discharges from existing facilities and new compost facilities and new compost facility
System 1 Existing		Highest ranked	Highest ranked due to: necessary facilities already existing potential effects are due to accidents	Highest ranked due to: necessary facilities already exist poential effects due to discharges from existing facilities
Goal/Criteria Group/Criteria	IMPACT	Natural	Potential for effects to terrestrial systems and resources	Potential for effects to aquatic systems including surface and ground water resources

TABLE 4.5

REGION OF PEEL NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT (continued)

System 6 (A + B) Mixed Waste Processing	Lowest ranked due to: emissions to amnosphere include dust, exhaust, colours, bioacrosols and gazes additional emissions from mixed waste processing and composting	
System 5 Wet/Dry	Second lowest ranked due Lowest ranked due to: ormissions to armosphere include dust, exbanst, edours, houserosols and gueses additional emissions from mixed waste composting dependent on composting dependent composting composting composting composting dependent composting and composting compositing composting composting composting composting composting composting composting composting composting composition composting composting composition composting composition composting composition composting composition compo	
System 4 Expanded Blue Box	Highest ranked due to: n processing and composing of mixed wastes or wet wastes emissions to atmosphere include dust, exhaust, cdours, bioaerosols and grases	
System 3 Direct Cost	Highest ranked due to: no processing and composing of mixed wastes or wet wastes emissions to amnosphere include dust, exhaust, odours, bioaerosols and gases	
System 2 Existing/Committed	Highest ranked due to: no processing and composting of mixed wastes or wet wastes emissions to amrosphere include due, exhaust, odours, bioaerosols and gases	
System 1 Existing	Highest ranked due to: no processing and compositing of mixed westes or wet wastes: mixing to amnosphere include dust, exhaust, colours, bioacrosols and gases	
Goal/Criteria Group/Criteria	Potential for effects to the atmospheric environment	

from 3Rs facilities. These discharges are expected to be in the form of leachate or contaminated surface water runoff from central compost facilities. The potential for effects due to discharges from existing 3Rs facilities was considered to be equal for all systems. Since the necessary facilities already exist for System 1, this system was ranked highest. Systems 2 and 4 were ranked equal and second highest. These systems both require a new MRF and central compost facility. The potential effects from these facilities are expected to be minimal since the MRF will process only dry recyclables and the proposed compost facility is an in-vessel compost facility. Discharges from this type of compost facility are more readily controlled. System 3 (Direct Cost) requires these same two new facilities but it is anticipated that illegal dumping of wastes will occur as a result of this system. This dumping of wastes and its potential effects on aquatic systems make it ranked lower than Systems 2 and 4. Systems 5 and 6 were considered equal and ranked lowest. Both systems require new 3Rs facilities in addition to those required for the other systems. These additional facilities are a compost and mixed waste facility, respectively. The potential effects on aquatic systems and resources from these new facilities were expected to be greater than any other system.

Potential Effects to the Atmospheric Environment

All six alternatives were expected to have emissions to the atmosphere. These emissions include dust, odours, bioaerosols and gases generated at MRFs and compost facilities, with dust and exhaust emissions generated by waste collection vehicles. There was no differentiation between systems based on these emissions. Emissions to the atmosphere are reduced by such measures as following proper operating procedures of the facility, installation of emission controls, regular facility cleaning and vehicle maintenance. The potential for effects to the atmospheric environment from emissions was expected to be greater if wet waste (household organic) or mixed waste was being processed and/or composted at centralized facilities in large volumes. Systems 1 to 4 do not include the management of wet waste or mixed waste. These four systems were ranked equal and highest. System 5 includes the composting of wet waste while System 6 includes Mixed Waste Processing and composting. Due to the different nature of the two processes, with the wet waste composting to be done using in-vessel technology and Mixed Waste Processing and composting typically being open to the atmosphere (i.e. windrow technology), the potential effects of System 6 were considered to be the greatest and the system was ranked lowest.

4.4.6.2 Overall System Ranking

By considering the ranking of systems by criterion and the criteria rankings together, an overall system ranking can be completed for the Natural Environment Criteria Group. The Existing system was ranked highest for each of the three criteria. As a result, this system was ranked highest overall for the Natural Environment Criteria Group. Systems 2 and 4 were ranked equal and second highest. These systems were ranked lower than System 1 due to potential effects to terrestrial systems and resources, and aquatic systems and water resources from siting a new MRF and central compost facility. System 3, although requiring the same new facilities, was ranked lower than Systems 2 and 4, and was ranked third lowest. The potential effects on terrestrial systems and aquatic systems from illegal dumping of wastes result in the lower ranking.

The Wet/Dry (System 5) and Mixed Waste Processing (System 6) systems were the second lowest and lowest ranked systems for all three criteria. System 6, Mixed Waste Processing, was ranked the lowest system overall. Potential effects to the atmospheric environment from Mixed Waste Processing (System 6) were considered to be greater than for System 5. The potential effects for the other criteria were considered equal for these two systems.

4.4.7 GTA IC&I Systems Ranking

4.4.7.1 Ranking of Systems by Criterion

In order to identify a ranking of the 3Rs systems for the GTA IC&I sector, the system alternatives were first ranked by criterion within the Natural Environment Criteria Group. The systems rankings by criterion were based on the "system net effects by criterion" and "advantages/disadvantages by criterion" documented in the individual system net effects tables contained in Schedule E. The IC&I system rankings for the three natural environment criteria are discussed below. The system rankings by criterion are summarized in Table 4.6.

Potential for Effects to Terrestrial Systems and Resources

For the IC&I 3Rs systems, effects to terrestrial systems and resources were predicted to occur as a result of expanding existing facilities or from siting new facilities. The existing (System 1) and Existing/Committed (System 2) systems for the IC&I sector do

		System 6 Processing of All IC&I Waste	owest ranked with	System 5	Lowest ranked due to:	potential effects due to sting new MRFs and compost facilities	Lowest ranked due to:	potential effects due to discharges from existing fazilities realities optional effects due to siting new MRFs and compost fazilities and discharges from new compost fazilities	Lowest ranked due to: emissions to atmosphere include dust, colours, exhaust, bioaerosols and gases additional emissions due to increased due to increased additional emissions additional emission em	requirements and IC&I organics processing
		System 5 Expanded 3Rs Regulations with Organics	I owest ranked with		Lowest ranked due to: Low	potential effects due to potential effects due to siing new MRFs and compost facilities	Lowest ranked due to: Low	potential effects due to pp discharges from existing di facilitiese fascilities and	Lowest ranked due to: Low emissions to atmosphere - en include dust, odours, in gases, additional emissions due - a no increase ollocion - du thick consistents	
	AL ENVIRONMENT	System 4 Expanded 3Rs Regulations	Third highest ranked with	\dashv	Third highest ranked due L	· potential effects due to expanding existing MRFs or siting new MRFs	Third highest ranked due	potential effects due to discharges from existing facilities new or expanded MRFs required which may result in additional effects	Dirid highest ranked due to: - emissions to atmosphere include dast, colours, exhaust, bioaerosols and gases - additional emissions due	vehicle requirements
IABLE 4.0	GTA IC&I NET EFFECTS SUMMARY FOR NATURAL ENVIRONMENT	System 3 Extended 3Rs Regulations	Third highest ranked with	System 4	Third highest ranked due to:	· potential effects due to expanding existing MRFs or stiting new MRFs	Third highest ranked due	potential effects due to discharges from existing facilities rew or expanded MRFs required which may result in additional effects	Third highest ranked due to: - emissions to atmosphere include dust, edours, exhaust, bioacrosols and gases. - additional emissions due	vehicle requirements
	NET EFFECTS SU	System 2 Existing/Committed	Highest renked with	System I	Highest ranked due to:	· necessary facilities already exist	Highest ranked due to:	nocessary facilities already exist - potential efficets due to discharges from existing facilities	Highest ranked due to: emissions to amosphere include dust, odours, cyhaust, bioacrosols and gases no increased emissions since no nicrease in coloriese or CP & I	organics processing
		System 1 Existing	Hickory control mith	Figurest ranked with System 2	Highest ranked due to:	. necessary facilities already exist	Highest ranked due to:	necessary facilities already exist potential effects due to discharges from existing facilities	Highest ranked due to: emissions to atmosphere include dust, odours, exhaust, bioacrosols and gases no utcreased emissions since no increase in entre of the contract of the c	organics processing
	-	Goal/Criteria Group/Criteria	IMPACT	Naturai	Potential for effects to terrestrial systems	and resources	Potential for effects	to aquanc systems including surface and ground water resources	Potential for effects to the amospheric environment	

not require any new facilities. These two systems were both ranked highest for this criterion. Both Systems 3 and 4 require additional capacity to process larger quantities of dry recyclables. These systems include expansions to existing MRFs, to accommodate these increased quantities, or the siting of new MRFs. The potential effects due to these expansions or new facilities can largely be mitigated by siting facilities in areas of compatible land uses. As a result, Systems 3 and 4 were ranked equally and slightly lower than Systems 1 and 2, or third highest. Systems 5 and 6 require both additional processing capacity for dry recyclables and increased capacity for the composting of wet wastes. These systems will require the siting of new MRFs and new compost facilities. The siting of these facilities is expected to result in a greater potential for effects to terrestrial systems due to the loss or removal of existing terrestrial features. Systems 5 and 6 were equally ranked lowest of the six systems.

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Potential effects to aquatic systems and water resources were expected to occur as a result of siting facilities and discharges from facilities. Effects may include the disruption of local surface water drainage patterns due to the siting of a facility or the discharge of contaminants from facilities. These discharges may include leachate and surface water runoff, containing silt and organic materials, from central compost facilities. The potential for effects due to discharges from existing 3Rs facilities was considered to be equal for all six of the IC&I systems. Systems 1 and 2 require no new or expanded facilities. These two systems were ranked highest. The new or expanded MRFs necessary to process increased quantities of dry recyclables in Systems 3 and 4 may result in some additional effects. These effects are expected to be minimal since no discharges are likely from these dry processes. Systems 3 and 4 were ranked slightly lower than the first two systems and third highest. A significant increase in the quantity of wet wastes (IC&I organics) will be processed and composted in Systems 5 and 6. Both systems require the siting of new MRFs and compost facilities. Potential effects are also expected due to discharges from the new compost facilities. Systems 5 and 6 were ranked equally as the lowest of the six IC&I systems.

Potential for Effects to the Atmospheric Environment

All six IC&I system alternatives were expected to have emissions to the atmospheric environment. These emissions include dust, odours, bioaerosols, and gases generated at MRFs, processing centres and compost facilities, with dust and exhaust emissions

generated by waste collection vehicles. Emissions to the atmosphere are reduced by such measures as following proper operating procedures at the facility, installation of emission controls, regular facility cleaning and vehicle maintenance. Effects to the atmospheric environment from emissions was expected to increase with the level of collection vehicle requirements and amount of IC&I organics processed and composted at centralized facilities in large volumes. Systems 1 and 2 maintain the present level of waste collection service and IC&I organics processing, resulting in no increase in emissions. These two IC&I systems were equally ranked highest. Systems 3 and 4 require that increased quantities of dry recyclables be collected. As a result these systems have increased collection vehicle requirements and additional emissions to the atmosphere. systems were both ranked third highest. The last two systems, Systems 5 and 6, are expected to have the greatest potential for effects to the atmospheric environment. Both systems include an increased level of IC&I organics collection and processing. These systems have the greatest requirements for collection vehicles. They also have the largest amount of IC&I organics processing and composting. Systems 5 and 6 were ranked lowest.

4.4.7.2 Overall System Ranking

Combining the ranking of systems by criterion with the criteria rankings allows an overall system ranking to be completed for the Natural Environment Criteria Group. The Existing and Existing/Committed systems (Systems 1 and 2, respectively) were both ranked highest for each of the three criteria. These two systems do not require any new 3Rs facilities, increased vehicle collection requirements or increase in IC&I organics processing. Systems 1 and 2 will result in the lowest potential for effects to the natural environment. Systems 3 and 4 both require the expansion of existing MRFs or the siting of new MRFs. The siting of these new facilities may result in potential effects to both terrestrial systems and aquatic systems. Increased collection vehicle requirements are also required, resulting in additional emissions to the atmosphere. Systems 3 and 4 were ranked third highest for all these criteria. Overall, Systems 3 and 4 were ranked third highest.

IC&I System 5 and System 6 were both ranked lowest. These two systems require increased processing capacity for dry recyclables and IC&I organics. This includes the siting of new MRFs and compost facilities. These systems are expected to have the greatest effects on terrestrial and aquatic systems due to siting new facilities and discharges from the new compost facilities. In addition, these systems have the largest collection vehicle requirements and largest amount of IC&I organics processing. Systems 5 and 6 are expected to have the greatest level of emissions to the atmosphere for all of the systems.

5. SUMMARY OF FINDINGS

The results of the assessment and evaluation of the residential 3Rs systems, with respect to the natural environment, are summarized in Table 5.1 for the four Regions.

TABLE 5.1
SUMMARY OF RESIDENTIAL 3RS SYSTEM RANKINGS BY REGION
NATURAL ENVIRONMENT

Region	System 1 Existing	System 2 Existing/ Committed	System 3 Direct Cost	System 4 Expanded Blue Box	System 5 Wet/Dry	System 6 Mixed Waste Processing
Durham	Highest ranked	Highest ranked	Third lowest ranked	Third highest ranked	Second lowest ranked	Lowest ranked
Metro Toronto	Highest ranked	Second highest ranked	Second lowest ranked	Second highest ranked	Third lowest ranked	Lowest ranked
York	Highest ranked	Second highest ranked	Second Least Preferred	Second highest ranked	Third lowest ranked	Lowest ranked
Peel	Highest ranked	Second highest ranked	Third lowest ranked	Second highest ranked	Second lowest ranked	Lowest ranked

The Existing system ranks as the highest system for all four Regions. This system does not require the development and operation of any new 3Rs facilities. As a result, the Existing system would result in no additional effects to the natural environment. Those components already in place were considered to have only a minimal effect on the natural environment since they are assumed to be operating within the applicable standards.

The second highest ranked system for three of the Regions was both the Existing/Committed and the Expanded Blue Box systems. The exception was the Region of Durham. The Existing/Committed System for Durham did not include any components that would result in additional effects when compared to the Existing system. These two systems were considered equal and highest ranked. However, the Expanded Blue Box System for Durham, like the three other Regions, requires new 3Rs facilities. These facilities may result in effects to the natural environment, making the Expanded Blue Box system lower ranked. York, Metro and Peel Regions required the same new 3Rs components for their Existing/Committed and Expanded Blue Box systems which may result in effects on the natural environment. Consequently, the two systems were ranked equally. The ranking of these systems is comparable to the Durham Expanded Blue Box system ranking.

The fourth and fifth ranked systems for the four Regions was either Direct Cost or Wet/Dry. The Direct Cost system was ranked higher than Wet/Dry for the Regions of Durham and Peel. The Wet/Dry system was the higher ranked of the two systems for York and Metro Toronto. For Durham and Peel, the Direct Cost system required fewer new facilities than the Wet/Dry system. The effects on the natural environment were expected to be greater from these new facilities than the anticipated illegal dumping as a result of the Direct Cost system. In York and Metro Toronto, both systems required the same new 3Rs facilities. For these Regions, the effects from illegal dumping of wastes, expected under the Direct Cost system, were expected to be more significant.

For all four Regions, Mixed Waste Processing was the lowest ranked system. This system typically required the greatest number of new 3Rs facilities resulting in a higher potential for effects to terrestrial systems and aquatic systems. Also, due to the nature of mixed wastes and the processing of these wastes, potential effects to the atmospheric environment were expected to be greater than for any of the other systems.

The results of the assessment and evaluation of the IC&I systems, with respect to the natural environment, are summarized below in Table 5.2.

TABLE 5.2
IC&I 3RS SYSTEM RANKINGS
NATURAL ENVIRONMENT

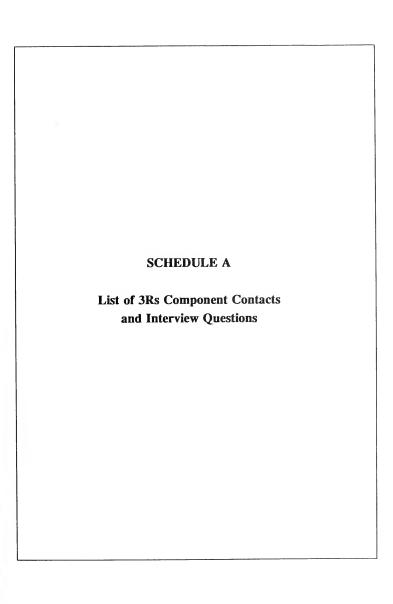
System 1 Existing	System 2 Existing/Committed	System 3 Extended 3Rs Regulations	System 4 Expanded 3Rs Regulations	System 5 Expanded 3Rs Regulations with Organics	System 6 Processing of All IC&I Waste
Highest ranked	Highest ranked	Third highest ranked	Third highest ranked	Lowest ranked	Lowest ranked

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LIST OF 3Rs COMPONENT CONTACTS

Location and Operator/Contact	Date of Interview	Facility Type
Compost Facilities		
Pittsburgh Township, Ontario Mr. John Rhodes	April 6, 1993	Leaf and yard waste and some IC&I organics
City of Sarnia, Ontario Mr. Ken McKenzie	April 15, 1993	Leaf and yard waste
City of Scarborough, Ontario Ms. Debra Dale & Mr. John Minor	April 8, 1993	Leaf and yard waste
City of Mississauga, Ontario Mr. Jim Cuthill	April 12, 1993	Wet/Dry Pilot
Region of Halton, Ontario Mr. John Smith	April 16, 1993	Wet/Dry Pilot
Scott's Composting Farm, Milton, Ontario Mr. Jim Scott	April 6, 1993	IC&I Organics
Metro Toronto, Ontario Avondale Facility, Mr. Caesar Corvinelli Dufferin Facility, Mr. Bob Sawyer	April 14, 1993 April 14, 1993	Leaf and Yard Waste In-Vessel
LH Resource Management, Hensall, Ontario Mr. Mark Jacobs	April 16, 1993	IC&I Organics (In-vessel)
Processing Facilities		
Reidel Corporation, Portland, Oregon Mr. Jeep Reid, City of Portland	April 15, 1993	Mixed Waste/Compost
Region of Durham, Ontario Mr. Peter Watson	April 6, 1993	Residential Recyclables (Blue Box)
Wright County, Minnesota Mr. Chuck Davis	April 6, 1993	Mixed Waste/Compost
Waste Management Inc., Etobicoke, Ontario Mr. Steve Osbourne	April 8, 1993	IC&I Wastes
Metro Toronto, Ontario Commissioners Street Mr. Bob Sawyer	April 13, 1993	Residential Recyclables (Blue Box)
Household Hazardous Waste		
Region of Ottawa-Carleton, Ontario Mr. Phil Lefebvre	April 6, 1993	Permanent Depot

Facility Name:
Location:
Contact:

Telephone Number:

3Rs COMPONENT CONTACTS - INTERVIEW QUESTIONS

Date:	
1.	Facility Ownership?
2.	Were any studies undertaken to site your facility and to predict possible biophysical and social environment effects associated with the facility?
	Probe Points - Were there any detailed impact assessment studies undertaken related to ground and surface water, air quality, traffic volumes/routes, proximity to residences/businesses?
	(If No, go to Question 4.)
3.	What potential biophysical and social environment effects were predicted and how were they to be mitigated? Does the facility include any design features intended to reduce potential effects? Have you ever had to rely on these features?
4.	Have there been any impacts on people, businesses, land, air, ground water from the operation of the facility?
	 Spills Emission/Air Quality Odours Noise
DRAFT	· November 1993

	Dust
	Traffic
	Rodents/Birds
	Other (Specify)
	. , ,
I	lave there been any complaints about the operation of the facility?
	Noise
	Odour
	Rodents/Birds
	Spills
	Traffic
	Dust
	Trespassing (Probe for children.)
	Land Value Concerns
	Other (Specify)
]	low have these identified effects and complaints been resolved? Installation of new design features.
	Monitoring.
	Operational change.
	Other (Specify)
	· · · · · · · · · · · · · · · · · · ·
	Oo you think that changes in the composition of material managed at your facility yould result in any other effects on the biophysical or social environments? If so what types of effects?
	s the quality of material coming to the site consistent month-to-month or does it ary?

5.

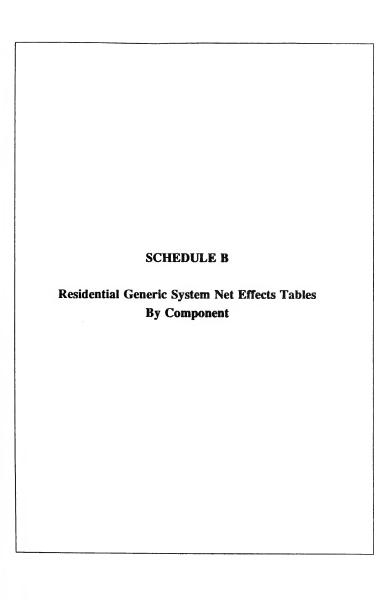
6.

7.

8.

9. How many people are employed in the operation of the facility?

	Number	Union	Municipal Jobs	Part-Time or Seasonal
Facility Staff				
Trucking Staff				



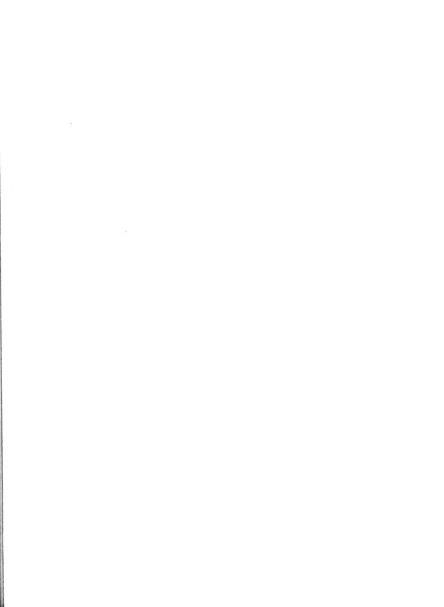


1. INTRODUCTION

The residential generic system net effects tables by component are presented in the following order:

Existing System	-	Tables B1.1 to B1.5
Existing/Committed System	-	Tables B2.1 to B2.5
Direct Cost System	-	Tables B3.1 to B3.5
Expanded Blue Box System	-	Tables B4.1 to B4.5
Wet/Dry System	-	Tables B5.1 to B5.5
Solid Mixed Waste Processing System	-	Tables B6.1 to B6.5







GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B1.1

CRITERIA GROUP: SYSTEM:

INDICATOR: CRITERIA:

Residential Existing

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households	Residential Leaf and Yard Waste Collection - Curbside collection of leaf and yard waste - Drop-off depot for leaf and yard waste

TABLE B1.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Residential Household Compositing Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community compositing	No effects identified	• None required	No effocts identified
Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Dup-Off) - Special curbside collections of Christmas trees - Special and weekly curbside collections of white goods - Drop-off depots for white goods - Drop-off depots for white goods - Special curbside collection for bulky items - Permanent drop-off depot for household hazardous waste (HHW) - Special household hazardous waste and orp-off days - Toxic Taxi service - Mobile HHW depots	Discharge of HHW to environment due to accidents (e.g. spills, leaks, fires, vehicle upset) may impact the localized growth of terrestrial biological systems, plants and agriculture resources	Install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depos to prevent discharges to the environment in the event of an accident Develop containgency measures for spills, fire control, emergency response, including staff training and available equipment.	Potential for loss/removal of terrestrial systems and resources is minimized and restricted to a small localized area by installing appropriate engineered features and by implementing contingency measures in the event of an accident
Composting Facilities - Centralized windrow composing of leaf and yard waste - In-vessel composing of source separated organics	No effects identified.	None required.	No effects identified.

TABLE B1.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Reuse Centres and Activities			
Municipal reuse centre Private reuse centre	 No effects identified 	None required	 No effects identified
Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days			
Public MRFs			
Processing centre for dry recyclables	 No effects identified. 	None required.	 No effects identified.
Residential Recycling Depots and Transfer Stations			
 Drop-off depot for dry recyclables Depots located at transfer stations 	No effects identified.	None required.	No effects identified.
Residential Promotion and Education			
3Rs promotion and education program	No effects identified	None required	No effects identified
Consumer education program			

TABLE B1.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

CRITERIA GROUP: CRITERIA:

INDICATOR:

Residential Existing
Natural
Potential for Effects to Terrestrial Systems and Resources
Potential for Disruntion Ffforts to Terrestrial

Resources
Б
Systems a
errestrial
Ę
Effects to
Disruption
ĮО
Potential

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection & Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from mith family units	No effects identified	None required	No effects identified
Self haul of garbage Self haul of garbage			
Kesidential Kecycling and Collection Curbside collection of Blue Box materials	No effects identified	None required	No effects identified
Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family			
residents not serviced by recycling Drop-off depot for rural households			
Residential Leaf and Yard Waste. Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard	No effects identified	None required	No effects identified
Waste			

TABLE B1.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing edsign features at HHW depots and implementing contingency measures in the event of an accident?	No effects identified
Mitigation/ Enhancement	• None required	Install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent discharges to the environment in the event of an accident to Develop contingency measures for spills, fire control, emergency response including staff training and available equipment	None required
Component Environmental Effects	No effects identified	HHW may be discharged to the environment due to accidents (e.g. spills, leaks, fries, vehicle upset) and disrupt the localized growth of terrestrial biological systems and resources	No effects identified
Component Category/ Components	Residential Household Composting - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pitot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-Off Gepots for white goods Drop-Off Gepots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste (drop-off days Toxic Taxi service Mobile HHW depots	Composting Facilities Centralized windrow composting of leaf and yard waste Invessel composting of source separated organics

TABLE B1.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified	No effects identified
Component Category/ Components	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Chariable reuse centres Food reuse organization Special goods exchange days	Public MRFs Processing centre for dry recyclables	Residential Recycling Depois and Transfer Stations Drop-off depot for dry recyclables Depois located at transfer stations	Residential Promotion and Education • 3Rs promotion and education program • Consumer education program

TABLE B1.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

SISIEM. CRITERIA GROUP: CRITERIA:

INDICATOR:

Residential Existing Natural

Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects		No effects identified		No effects identified					 No effects identified 	
Mitigation/ Enhancement		None required		None required					None required	
Component Environmental Effects		No effects identified		No effects identified					No effects identified	
Component Category/ Components	Garbage Collection and Disposal	Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage	Residential Recycling and Collection	Curbside collection of Blue Box materials	Expanding curbside collection Collection of bins of recyclables from	multi-family units Drop-off depot for multi-family	residents not serviced by recycling Drop-off depot for rural households	Residential Leaf and Yard Waste Collection	Curbside collection of leaf and yard waste	 Drop-off depot for leaf and yard waste

TABLE B13 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Commonent	Net Effects	No effects identified	No loss or removal of aquatic systems including water resources expected due to installing design features at depost to prevent discharges of HHW, hold HHW collections at appropriate locations and having contingency measures in place.
Mitigation	Enhancement	None required	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and groundwater resources and ground water resources, and ground water resources, areas where containment of spills is available, and areas where emergency response including trained saff and equipment are available. Examples of locations as pills and emergency response include public works yards, transfer stations, industrial areas and fire halls. Develop contingency measures for spills and emergency response (including staff training and available (including staff training and available deupinment) in the event of accidents a permanent and temporary depots or due to vehicle upsets
Commonount	Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the loss or removal of aquatic biological systems and water resources
	Component Category Components	Residential Household Composting Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-Off depots for white goods Special curbside collection for bulky items Special curbside collection for bulky items Permanent drop-Off depots for white goods Special curbside collection for bulky items Special household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depots

TABLE B13 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	Install features at compost facility to prevent discharge of contaminants to surface water (e.g., suorm water management pond) and to prevent surface water mooff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of feachate to ground water (e.g. line, leachate collection monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being composition of wastes being composition of wastes being composition of water different and contaminants, as required.	None required	None required	• None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquaic biological systems and water resources	No effects identified	No effects identified	No effects identified
Component Category/ Components	Composting Facilities Centralized windrow composting of leat and yard waste In-vessel composting of source separated organics Centralized windrow composting of source separated residential organics Centralized windrow composting of source separated Testlerial organics Centralized windrow composting of source separated IC&I organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centre Charitable reuse centre - Charitable reuse centres - Food reuse organizations - Snecril geods exchange days	Public MRPs Processing centre for dry recyclables	Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations

TABLE B1.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

-				
Component	Net Effects		No effects identified	
Mitigation/	Enhancement		None required	
Component	Environmental Effects		 No effects identified 	
Component Category/	Components	Residential Promotion and Education	3Rs promotion and education	Consumer education program

TABLE B1.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

INDICATOR: CRITERIA:

CRITERIA GROUP:

Residential Existing

Natural Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Discuption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Oblection of bins of recyclables from multi-family units residents not serviced by recycling Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

TABLE B1.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

	Component Net Effects	No effects identified	Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depots, hold HHW collections at appropriate locations and having contingency measures in place
	Mitigation/ Enhancement	None required	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permeability flooring, site grading) at permeant HHW depots to prevent discharges to surface and ground water resources and locations away from surface and pround water resources, areas where containment of spills is available and areas where emergency response including trained saff and equipment are available. Examples of locations fined to public works yards, transfer stations, industrial areas and firehalls Develop contingency measures for spills and emergency response (including staff training and available equipment) in the event of accidents a permeant and temporary depots of the to vehicle upsets
	Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accelents (e.g. spills, leaks, vehicle upse) resulting in the disruption of aquatic biological systems and water resources
Over the second	Component Category/ Components	Residential Household Composting - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Oil) Special curbside collections of Christmas uces Christmas uces Special curbside collections of Special curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste (HWW) Special household hazardous waste (HWW) Special household hazardous waste (TOXic Taxi service Mobile HHW depots

TABLE B1.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachate, silt and organic materials is minimized by facility design features to prevent discharges to surface and ground waters	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g., storm water management pond) and to prevent surface water moff from entering compost area (e.g., berms, ditches around facility). Install features to prevent discharge of leachate to ground water (e.g., berachate collection) Inner, leachate collection) Inner, leachate collection) Composition of wastes being composition of wastes being composition of wastes being composition of wastes being removed.	• Моне геquired	None required	• None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water tunoff from compost facility may disrupt surface water bodies by buildup of silt and organic materials	No effects identified	No effects identified	No effects identified
Component Category/ Components	Composting Facilities • Centralized windrow composting of leaf and vard waste • In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse centres Special goods exchange days	Public MRFs Processing centre for dry recyclables	Residential Recycling Depois and Transfer Stations Drop-off depot for dry recyclables Depois located at transfer stations

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
esidential Promotion and Education				
3Rs promotion and education nnoram	 No effects identified 	None required	 No effects identified 	
Consumer education program				

TABLE B1.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

Residential Existing Natural CRITERIA GROUP: SYSTEM:

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

INDICATOR: CRITERIA:

Component Net Effects	Potential for release of dust to the amnosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	Potential for release of dust to the atmosphere by collection vehicles is reduced but not climinated. Dust and exhaust emissions are still expected	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected.
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenace
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings. Collection of residential garbage from multi-family units Soft haul of garbage.	Residential Recycling and Collection - Curbaids collection of Blue Box materials - Expanding curbside collection - Collection of bins of recyclables from multi-family units - Drop-off depot for multi-family residents not serviced by recycling - Drop-off depot for rural households - Drop-off depot for rural households	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

TABLE B1.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	init as • Some odours may be emitted but no effects to the atmosphere are expected due to anticipated low emission levels	icles - Potential for release of dust and exhaust to the amosphere by collection whileds is reduced but not eliminated - Potential for dust or particles due to mulching and collecting Christmas trees is reduced but not eliminated - Release of harmful air emissions is contained inside permanent HHW depoil it. Potential for effects is reduced with use of safety equipment and training but not eliminated or effects in educed with use of safety equipment and training or ents earls
Mitigation/ Enhancement	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	Decrease speed of collection vehicles along streets Regular weeping of municipal streets to collect materials which may generate dust Regular vehicle maintenance Cover trucks collecting mulched trees to prevent release of dust and particular Design permanent HHW depot with features (e.g. air exchange and filter) to collect harmful air emissions to prevent effects and the release of gasses to the amosphere Provide staff working with HHW with appropriate safety equipment and training Develop contingery measures for spills and emergency response (including saff training and equipment) in the event of accidents to contain and restrict the release of harmful gas emissions to the amosphere
Component Environmental Effects	Odours may be released to atmosphere by compost units	Collection vehicles travelling along roads may result in release of dust and exhaust to the amospherer of chinding or mulching of Christmas trees as part of collection may result in release of dust to the amosphere. Odours and harmful gases may be emitted from HHW collected due to the integrity of peckaging or as a result of accidents (e.g. spills, leaks, vehicle upset). This may result in effects to the atmosphere.
Component Category/ Components	Residential Household Composting Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Oif) Special curbside collections of Christmas trees Christmas Chri

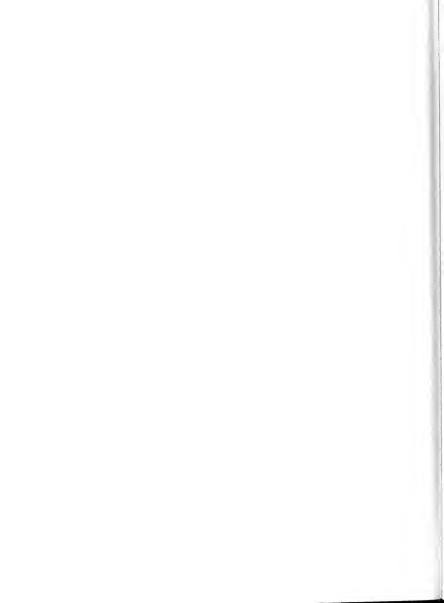
TABLE B1.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (confinued)

Component Net Effects	Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost.	No effects identified
Mitigation/ Enhancement	Prevent and minimize volatile organic compound (VOCS) emissions by removing HHW from waste stream - Proper design and operation of compost facility such as mantaining acrobic conditions and limited storage of purrescible feedstocks before composining. Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and broillers. Minimize contact with and general exposure to open air during shredding, mixing, soring, untaing and screening of material and screening of material and sevening of material and sevening daverse weather conditions (i.e. windy weather) Limit operations during adverse weather conditions (i.e. windy	None required
Component Environmental Effects	Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or nondescriable with no effect on the almosphere.	No effects identified
Component Category/ Components	Composting Facilities Cantalized windrow composting of leaf and yard waste In-vessel composting of source separated organics	Reuse Centres and Activities Nunicipal reuse centre Private reuse centre Non-profit reuse centre Chariable reuse centres Food reuse organization Special goods exchange days

TABLE B1.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bloacrosols within MRF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to amosphere is reduced but not climinated. No effects expected as a result of dust emissions.	No effects identified
Mitigation/ Enhancement	Provide ventibation system to capture building air for removal of dust and bloacrosols and replace with clean air, either at work stations or for entire MRF Provide equipment to individual staff to restrict or prevort exposure to dust and bioacrosols(e.g. respirator) Daily cleaning of facility equipment and floors	Maintain area around depots to eliminate debris, litter and other materials which may generate dust	• None required
Component Environmental Effects	Processing of recyclables may generate dust and bioacrosol emissions wibin the facility resulting in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded	No effects identified
Component Category/ Components	Public MRFs • Processing centre for dry recyclables	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education - 3Rs promotion and education program - Consumer education program





GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B2.1

SYSTEM: CRITERIA GROUP: INDICATOR: CRITERIA:

Residential Existing/Committed

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal - Curbside collection of residential garbage from single family dvellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	Residential Recycling and Collection - Curbside collection of Blue Box materials - Expanding curbside collection - Collection of bins of recyclables from multi-family units - multi-family units - Drop-off depot for multi-family - residents not serviced by recycling - Drop-off depot for rural households - Community recycling centres - Recycling at all multi-family - buildings of greater than 6 units - Blue Box recycling mandated - Engineered recycling depot	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

TABLE B2.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No loss/removal of forest or agriculture resources expected due to sition denots and installine design	features to prevent discharges of HHW to the cevionment in the event of an accident • Potential for loss/removal of recreating systems and resources is minimized and restricted to a small localized area by installing appropriate organered features and by implementing contaigency measures in the event of an accident		Potential for loss or removal of terrestrial systems and resources is minimized but not climinated by site selection process
Mitigation/ Enhancement	None required	 Locate depots in areas of compatible land use (i.e. municipal works yards, renofer etatione industrial areas 	landfill site) through sting process Install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent discharges to the environment in the event of an accident envelope contingency measures for spills, fire control, emergency response, including staff training and available equipment.		Locate compost facility in areas of compatible land use (i.e. industrial lands, landfill site, municipal works yard) through sting process
Component Environmental Effects	No effects identified	Depois for HHW, white goods and bulky items require siting which may sent in localized locetermoval of	small area of forest or agricultural resources Discharge of HHW to environment due to accidents (e.g. spills, leaks, fires, vehicle upset) may impact the localized growth of terrestrial biological systems, plants and agriculture resources		Compost facility may require asignificant site are depending on capacity of facility, compost method and size of curing area. Large site may result in loss/removal of terrestrial biological systems, forest and agricultural resources.
Component Category/ Components	Residential Household Composting - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	Other Residential Waste Diversion HIHW, Toxic Taxi, Pitot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees	Special and worsty cursave collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste dop-off days Toxic Taxa service Toxic Taxa service Mobile HHW depots	Composting Facilities	Centralized windrow composting of leaf and yard waste In-vessel composing of source separated organics

TABLE B2.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (confinued)

Component Category/ Components Components Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse contre Charitable reuse centres Gardialble reuse centres Food reuse centres	Component Environmental Effects No effects identified	Mitigation/ Enhancement One required	Component Net Effects Net effects identified
Special goods exchange days Public MRFs Processing centre for dry recyclables Improvements to existing MRFs	MRFs require site area which may be of sufficient size resulting in the localized losyfermoval of terrestrial biological systems, plant life, forest and agricultural resources	Locate MRFs in areas of compatible land use (i.e. industrial areas) through siting process	No loss or removal of terrestrial systems or resources expected due to siting of MRFs
Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Depot for recyclables requires sting which may result in the localized loss or removal of a small area of forest or agricultural resources	 Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, commercial and industrial areas) through siting process 	No loss or removal of terrestrial resources expected due to sting depots
Residential Promotion and Education 3Rs promotion and education program Consumer education program	No effects identified	• None required	No effects identified

TABLE B2.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Existing/Committed

Natural Potential for Effects to Terrestrial Systems and Resources

Potential for Disruption Effects to Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection - Curbside collection of Blue Box materials - Expanding cutside collection of multi-family units - Drop-off depot for multi-family residents not serviced by recycling residents not serviced by recycling community recycling courtes - Community recycling centres - Recycling at all multi-family buildings of greater than 6 units buildings of greater than 6 units - Blue Box recycling nandated - Engineered recycling and edox	Residential Leaf and Yard Waste Collection Curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste

TABLE B22 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing design features at HHW depots and implementing contingency measures in the event of an accident	No effects identified
Mitigation/ Enhancement	None required	Install features (e.g. sump drains, fire prevention, containment berms) at permeanent HHW depost to prevent discharges to the environment in the event of an accident robustion contingency measures for spills, fire control, emergency response including staff training and available equipment	None required
Component Environmental Effects	No effects identified	HHW may be discharged to the environment due to accidents (e.g. spills, leask, fires, wellede upset) and disrupt the localized growth of terrestrial biological systems and resources	No effects identified
Component Category/ Components	Residential Household Composting Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Properties of Special curbside collections of Chrismas trees Chrismas trees collections of with goods of Special and weekly curbside collections of white goods of Special curbside collection for bulky items of Permanent drop-off depot for household hazardous waste (HHW) special household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi stevice Mobile HHW depots	Composting Facilities Centralized windrow composting of leaf and yard waste In-vessel composting of source separated organics

TABLE B2.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified	No effects identified
Component Category/ Components	Reuse Centres and Activities • Municipal reuse centre • Private reuse centre • Non-profit reuse centre • Non-profit reuse centres • Food reuse organization • Special goods exchange days	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations	Residential Promotion and Education • 3Rs promotion and education program • Consumer education program

TABLE B2.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

CRITERIA GROUP: SYSTEM:

INDICATOR: CRITERIA:

Residential Existing/Committed

Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	• None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dvellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households Community recycling centres Recycling of all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling debot	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

Component Net Effects	No effects identified	No loss or removal of aquatic systems including water resources expected due to installing design features at depois to prevent discharges of HHW, hold HHW collections at appropriate Locations and having contingency measures in place
Mitigation/ Enhancement	None required	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HWW depois to prevent discharges to surface and groundwater resources. Hold special HHW collections at locations away from surface and becations away from surface and spound water resources, areas where containment of spills is available, and even system, response, including trained staff and equipment are available. Examples of locations including trained staff and equipment are available. Examples of locations including staff training and available (including staff training and available equipment) in the event of sacidents at permanent and temporary depots of the lo vehicle upsets.
Component Environmental Effects	No effects identified	HHW may be dischanged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehiele upset) resulting in the loss or removal of aquatic biological systems and water resources
Component Category/ Components	Residential Household Composting Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permaent drop-off depot for household hazardous waste (HHW) Special household hazardous waste chrop-off days Toxic Taxi service Mobile HHW depots

Component Net Effects	No loss or removal of aquatic systems or water resources expected due to siting compost facility Potential for loss or removal of aquatic systems and water resources is minimized by facility design features to prevent discharges to surface and ground waters	No effects identified
Mitigation/ Enhancement	 Locate compost facility in an area away from surface water bodies and drannage courses Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management pront) and to prevent discharge of contaminants to surface water (e.g. storm water management pront) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composited to identify and treat contaminants, as required 	• None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources.	No effects identified
Component Category/ Components	Composting Facilities Centralized windrow composting of leaf and yard waste In-vessel compositing of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Public MRFs Processing centre for dry recyclables Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education 3 Rs promotion and education program Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B2.4

SYSTEM:

INDICATOR:

CRITERIA GROUP: CRITERIA:

Residential Existing/Committed

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/	Garbage Collection and Disposal garbage from single family dwellings Cuchside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Set haul of garbage Set haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households Community recycling centres Recycling of all multi-family buildings of greater than 6 units Blue Box recycling and added Engineered recycling depot	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

Component Net Effects	No effects identified	Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depots, hold HHW collections at appropriate locations and having contingency measures in place	
Mitigation/ Enhancement	None required	Install features (e.g. sump drains, containment berns, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and ground water resources and pround water resources, areas where containment of spills is available and ground water energency response including trained staff and equipment are available. Examples of locations include public works yards, transfer stations, industrial areas and fireballs. Develop contingency measures for spills and equipment are available. Examples of locations include public works yards, transfer stations, industrial areas and fireballs. Develop contingency measures for spills and energency response (including staff training and available depipment) in the even of accidents are contained and interesting and available designment.	at permanent and temporary depots of due to vehicle upsets
Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the disruption of aquatic biological systems and water resources	o e
Component Category/ Components	Residential Household Composting Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Christmas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Special curbside collection for bulky items Permanent drop-off depots for household hazardous waste (HHW) Goop-off Taxi service Mobile HHW depots	

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachate, still and organic materials is minimized by facility design features to prevent discharges to surface and ground waters and by proper siting of facility	No effects identified
Mitigation/ Enhancement	 Locate compost facility in an area away from surface water bodies and drainage courses Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storm water (e.g. storm water management pond) and to prevent surface water munoff from entering compost area (e.g. berms, ditches around facility). Install features at compost facility to ground water (e.g. liner, leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being real real contaminants as required real contaminants as required 	None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water nuroff from compost facility may disrupt surface water bodies by buildup of silt and organic materials	No effects identified
Component Category/ Components	Composting Facilities • Centralized windrow composting of leaf and yard waste • In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

Component Net Effects	No disruption to surface water resources expected due to sting of MRF	No effects identified	No effects identified
Mitigation/ Enhancement	Locate facility in compatible area (e.g. industrial areas, landfill site, public works yard) with storm water management features in place (e.g. storm sewers, storm water retention pond)	None required	None required
Component Environmental Effects	MRF covering large area may disrupt local surface water drainage patterns	No effects identified	No effects identified
Component Category/ Components	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations	Residential Promotion and Education 3Rs promotion and education program Consumer education program

TABLE B2.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA: INDICATOR:

Residential Existing/Committed

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

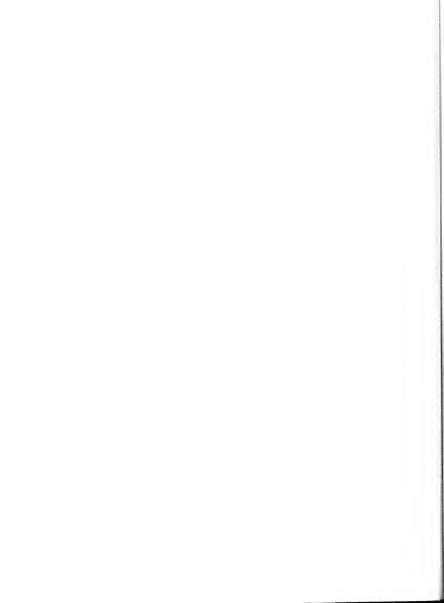
Component Net Effects	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle manitenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating maecrials Regular vehicle maintenance	
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Rectional recycling legislation	Residential Recycling and Collection - Curbside collection of Blue Box materials - Expanding curbside collection - Collection of bins of recyclables from multi-family units - multi-family units - brop-off depot for multi-family - residents not serviced by recycling - Drop-off depot for rural households - Drop-off depot for rural households - Community recycling centres - Recycling of all multi-family - buildings of greater than 6 units - Blue Box recycling and added - Engineered recycling depot	Residential Leaf and Yard Waste Collection

Component Net Effects	Some odours may be emitted but no effects to the amosphere are expected due to anticipated low emission levels	Potential for release of dust and exhaust to the autosphere by collection vehicles is reduced but not eliminated of the state of particles due to mulching and collecting Christmas trees is reduced but not eliminated release of harmful air emissions is contained made permanent HHWM oftpot Potential for effects is reduced with use of safety equipment and training, but not eliminated
Mitigation/ Enhancement	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	Decrease speed of collection vehicles along streets to collect materials which may generate dust agreement with the materials which may generate dust and an articles of collect materials which may expense the materials which may expense the materials which may be a collect material material and particulate. Design permanent HWW depot with Features (e.g. air exchange and filter) to collect hamful air emissions to prevent effects and the release of gases to the amosphere Provide staff working with HHWW with appropriate safety equipment and training. Develop contingency measures for spills and emorgency response (including staff training and equipment) in the event of accidents to contain and restrict the release of aumosphere amosphere.
Component Environmental Effects	Odours may be released to amosphere by compost units	Collection vehicles travelling along rads may result in release of dust and exhaust to the atmosphere. Grinding or mutching of Christmas trees as part of collection may result in release of dust to the atmosphere emitted from HHW collected due to the integrity of packaging or as a result of accidents (e.g. spills, leaks, vehicle upset). This may result in effects to the atmosphere
Component Category/ Components	Residential Household Compositing Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toric Tari, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-off depose for white goods Special curbside collection for bulky items Permanent drop-off depose for white goods Special curbside collection for bulky items Permanent drop-off depose for white goods Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depois

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Composting Facilities Centralized windrow composting of leaf and yard waste In-vessel composting of source separated organics	Air emissions in the broad categories of dust, bioacrosols and gascous emissions (volatie organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere	Prevent and minimize volatile organic compound (VOCS) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining aerobic conditions and limited storage of purescrible feedstocks before composting. Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biolificats Minimize contact with and general exposure to open air during and screening of material strubers and screening of material Limit operations during adverse veather) Limit operations (i.e. windy weather)	Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost
Reuse Centres and Activities Municipal reuse cortre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days	No effects identified	None required	No effects identified

-				
	Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioacrosols within MRF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to amosphere is reduced but not eliminated. No effects expected as a result of dust emissions.	No effects identified
	Mitigation/ Enhancement	Provide ventitation system to capture building air for removal of dust and hoacrosols and replace with clean air, either at work stations or for entire MRF. Provide equipment to individual saff to restrict or prevent exposure to dust and bioacrosols(e.g. respirator) Daily cleaning of facility equipment and floors.	Maintain area around depots to eliminate debris, litter and other materials which may generate dust	None required
	Component Environmental Effects	Processing of recyclables may generate dust and biosecrosol emissions within the facility resulting in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded	No effects identified
	Component Category/ Components	Public MRFs Processing centre for dry recyclables Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education 3Rs promotion and education program Consumer education program





GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B3.1

SYSTEM: CRITERIA GROUP: CRITERIA: INDICATOR:

Residential Direct Cost

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Direct Cost system for garbage collection Curbside collection of residential garbage form single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households Community recycling centres Recycling at all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling mandated	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste in Drop-off depot for leaf and yard waste

Component Net Effects	No effects identified	No loss/removal of forest or agriculture resources expected due to siting depos and installing design features to prevent discharges of HHW to the environment in the event of an accident Potential for loss/removal of terrestral systems and resources is minimized and resurces is minimized and restricted to a small localized area by installing appropriate onlineared features and by implementing contingency measures in the event of an accident
Mitigation/ Enhancement	None required	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, industrial areas, landfill site) through sting process install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent descharges to the ervironment in the event of an accident Develop contingency measures for papills, fire control, emergency response, including staff training and available equipment.
Component Environmental Effects	No effects identified	Depots for HHW, white goods and bulky items require sting which may result in localized lossfremoval of small area of forest or agricultural resources Discharge of HHW to environment due to accidents (e.g. spills, leaks, fires, vehicle upse) may impact the localized growth of terrestrial biological systems, plants and agriculture resources
Component Category/ Components	Residential Household Composing - Door-to-door distribution of backyard composters to 80% of single family household? - Promotion of vermi-composting to multi-family units - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and corperative housing complexes - Community composting units of composting complexes - Community composting complexes	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Christmas tr

Component Category/	Component	Mitigation/	Component
Components	Environmental Effects	Enhancement	Net Effects
Composting Facilities Centralized windrow composting of leaf and yard waste in-vessel composing of source separated organics	Compost facility may require significant site area depending on capacity of facility, compost method and size of curing area. Large site may result in loss/removal of terrestrial biological systems, forest and agricultural resources.	Locate compost facility in areas of compatible land use (i.e. industrial lands, landfil site, municipal works yard) through siting process	Potential for loss or removal of terrestrial systems and resources is minimized but not climinated by site selection process
Reuse Centres and Activities			
Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Charitable reuse centres Food reuse organization Special goods exchange days	No effects identified	None required	No effects identified
Public MRFs		-	
Processing centre for dry recyclables Improvements to existing MRFs	 MRFs require site area which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agricultural resources 	Locate MRFs in areas of compatible land use (i.e. industrial areas) through siting process	No loss or removal of terrestrial systems or resources expected due to slung of MRFs
Residential Recycling Depots and Transfer Stations			
Drop-off depot for dry recyclables Depots located at transfer stations	Depot for recyclables requires sting which may result in the localized loss or removal of a small area of forest or agricultural resources	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, commercial and industrial areas) through siting process	No loss or removal of terrestrial resources expected due to sting depots

				,
Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
Residential Promotion and Education				
Promotion/education program on Direct Cost englan	 No effects identified 	None required	No effects identified	
Fromction/education program on Course seduction/program on				
and recycling				
3Rs promotion and education morram				
Consumer education program				

TABLE B3.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

CRITERIA GROUP: CRITERIA: INDICATOR:

Residential Direct Cost Natural

Potential for Effects to Terrestrial Systems and Resources
Potential for Disruption Effects to Terrestrial Systems and Resources

Component Net Effects	Potential for disruption effects to errestrial systems and resources due to illegal dumping of wastes will be minimized but not eliminated	No effects identified
Mitigation/ Enhancement	Provide opportunity for residents to reduce their waste load (e.g. recycling programs, backyard composters, etc.) before being penalized for producing too much refuse Public education and promotion of the cost saving implications of the program Enforcement of littering and illegal dumpting by-laws.	• None required
Component Environmental Effects	Illegal dumping of wastes may occur due to Direct Cost system and potentially disrupt terrestrial systems and resources	No effects identified
Component Category/ Components	Garbage Collection and Disposal • Direct Cost system for garbage collection • Curbside collection of residentials garbage from single family dwellings and page from single family dwellings. • Self hand of garbage • Regional recycling legislation	Residential Recycling and Collection - Curbaids Collection of Blue Box materials - Expanding curbside collection of Bulle Box multi-family units of recyclables from multi-family units - Drop-off depot for multi-family residents not serviced by recycling - Drop-off depot for mutat households - Community reducing centres - Recycling at all multi-family buildings of greater than 6 units - Blue Box recycling and added - Engineered recycling depot

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste	Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households - Promotion of vermi-composting to multi-family units - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Other Residential Waste Diversion (HHW, Toxic Taxt, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off)			
Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky	HHW may be discharged to the environment due to accidents (e.g., spills, leaks, fires, whele upsed) and disrupt the localized growth of terrestrial biological systems and resources	 Install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent dischanges to the environment in the event of an accident Develop contingency measures for smills, fire control, emergency 	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing design features at HHW depots and implementing contingency measures in the event of an accident.
Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Tax is service Adain HHW depots		response including staff training and available equipment	
Composting Facilities			
Centralized windrow composting of leaf and yard waste In-vessel composting of source separated organics	No effects identified	None required	No effects identified
Reuse Centres and Activities			
Municipal reuse centre Private reuse centre Non-profit reuse centre	No effects identified	None required	 No effects identified
Charitable reuse centres Food reuse organization Special goods exchange days		,	

Component Net Effects	No effects identified	No effects identified	Promotion/education of Direct Cost and 3Rs programs reduces potential for disruption of terrestrial systems and resources due to illegial dumping of wastes. Disruptive effects are not eliminated
Mitigation/ Enhancement	None required	• None required	Develop programs which most effectively reach the residents of the municipality
Component Environmental Effects	No effects identified	No effects identified	Promotion/education of Direct Cost system and 3Rs programs reduces potential for illegal dumping of wastes and disruptive effects on terrestrial systems and resources
Component Category/ Components	Public MRFs Processing centre for dry recyclables Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education - Promotion/education program on Direct Cost system - Promotion/education program on source reduction/pre-cycling, reuse and recycling - 3Rs promotion and education program - Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B3.3

Residential Direct Cost

SYSTEM: CRITERIA GROUP: INDICATOR: CRITERIA:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources Natural

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enbancement	None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal - Direct Cost system for garbage collection - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Seff haul of garbage - Regional recycline Jestislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for multi-family residents and serviced by recycling Experime at all multi-family buildings of greater than 6 units buildings of greater than 6 units Blue Box recycling mandaed Fromeered recycling debot

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	Residential Leaf and Yard Waste Collection Curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste	Residential Household Composting Door-to-door distribution of backyard composters to 80% of single family households Promotion of vermi-composting to multi-family units Backyard composter distribution programs Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting

Component Net Effects		No loss or removal of aquatic systems including water resources expected due to installing design features at depots to prevent discharges of HHW, hold HHW collections at appropriate locations and having contingency measures in place	
Mitigation/ Enhancement		or Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and groundwater resources. Hold special HHW collections at locations away from surface and ground water resources, areas where containment of spills is available, and areas where emergency response including trained staff and equipment are available. Examples of locations including trained staff and equipment are available. Examples of locations including trained staff training areas and fire halls or Develop contingency measures for spills and emergency response (including staff training and available equipment) in the event of accidents	at permanent and temporary depots or due to vehicle upsets
Component Environmental Effects		HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the loss or renroval of aquatic biological systems and water resources	
Component Category/ Components	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off)	Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depots	

Component Net Effects	No loss or removal of aquatic systems or water resources expected due to singing compost facility Potential for loss or removal of aquatic systems and water resources is minimized by facility design features to prevent discharges to surface and ground waters	No effects identified
Mitigation/ Enhancement	- Locate compost facility in an area away from surface water bodies and drainage courses. - Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water. Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management prond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to grovent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composted to identify and treat composited to identify and treat companioning or stakes being composted to identify and treat contaminants, as required	None required
Component Environmental Effects	Compost facility may generate leachtac containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources	No effects identified
Component Category/ Components	Composing Facilities Centralized windrow composting of leaf and yard waste hrvessel composing of source separated organics	Reuse Centres and Activities - Municipal reuse centre - Private reuse centre - Non-profit reuse centre - Charitable reuse centres - God reuse organization - Special goods exchange days

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
Public MRFs				
Processing centre for dry recyclables Improvements to existing MRFs	No effects identified	None required	No effects identified	
Residential Recycling Depots and Transfer Stations		• None required	No effects identified	
Drop-off depot for dry recyclables Depots located at transfer stations	No effects identified			
Residential Promotion and Education				
Promotion/education program on Direct Cost system	 No effects identified 	None required	No effects identified	
 Promotion/education program on source reduction/pre-cycling, reuse 				
and recycling • 3Rs promotion and education				
program Consumer education program				

TABLE B3.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Direct Cost

Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Natural

and ground water resources due to aquatic systems including surface illegal dumping of waters will be minimized but not eliminated Potential for disruption effects to Component Net Effects No effects identified reduce their waste load (e.g. recycling programs, backyard composters, etc.) before being penalized for producing Provide opportunity for residents to Enforcement of littering and illegal Public education and promotion of the cost saving implications of the Enhancement Mitigation/ dumping by-laws too much refuse None required program Illegal dumping of wastes may occur including surface and ground water potentially disrupt aquatic systems due to Direct Cost system and Environmental Effects Component No effects identified resources Collection of residential garbage from Collection of bins of recyclables from garbage from single family dwellings Drop-off depot for rural households residents not serviced by recycling Residential Recycling and Collection Curbside collection of residential Curbside collection of Blue Box buildings of greater than 6 units Drop-off depot for multi-family Direct Cost system for garbage Expanding curbside collection Garbage Collection and Disposal Regional recycling legislation Blue Box recycling mandated Component Category/ Community reducing centres Recycling at all multi-family Engineered recycling depot Components Self haul of garbage multi-family units multi-family units collection materials

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste	Residential Household Compositing - Door-to-door distribution of backyard composters to 80% of single family households - Promotion of vermi-composting to multi-family units - Backyard composter distribution programs - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting

Component Net Effects	Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depost, hold HHW collections at appropriate locations and having contingency measures in place
Mitigation/ Enbancement	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and ground water resources Hold special HHW collections at locations away from surface and ground water resources, areas where containment of spills is available and areas where emergency response including trained staff and equipment are available. Examples of locations include public works yards, transfer stations, industrial areas and fire halls shills and emergency response (including staff training and available for spills and emergency response (including staff training and available deupment) in the event of accidents at permanent and temporary depots or due to vehicle upsets
Component Environmental Effects	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the disruption of aquaic biological systems and water resources
Component Category/ Components	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Oil) Special curbside collections of Christmas trees Special curbside collections of white goods Collections of white goods Special curbside collection for buly items Special curbside collection for bulky items Drop-Oif depois for white goods Special curbside collection for bulky items Special curbside collection for bulky items Permanent drop-Oif depot for household hazardous waste (HHW) household hazardous waste drop-Oif days Toxic Taxi service Mobile HHW depots

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachate, still and organic materials is minimized by facility design features to prevent discharges to surface and ground waters and by proper sting of facility	No effects identified
Mitigation/ Enhancement	Locate compost facility in an area away from surface water bodies and daining courses. Locate compost facility in an area of soils with the capacity to attenuate leached from discharging to ground water. Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storn water nanagement pond) and to prevent surface water modif from entering compost area (e.g. berms, ditches around facility). Install features at compost facility to prevent discharge of leachate to ground water (e.g. line, leachate collection) Ongoing monitoring of any surface water collection of wastes being composition of wastes being composition of wastes being removed and reat conhaminants as required	None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and discharged to ground and surface waters and discupt aquatic biological systems Surface water runoff from compost facility may discupt surface water bodies by build-up of sit and organic materials	No effects identified
Component Category/ Components	Composting Facilities Cearalized windrow composting of leaf and yard wastes In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

Component Net Effects	No disruption to surface water resources expected due to sting of MRF	No effects identified	Promotion/education of Direct Cost and 3Rs programs reduces potential for disruption of aquatic systems including surface and ground water resources due to lilegal dumping of wastes. Disruptive effects are not eliminated	
Mitigation/ Enhancement	 Locate facility in compatible area (e.g. industrial areas, landfill site, public works yard) with storm water management features in place (e.g. storm sewers, storm water retention pond) 	None required	Develop programs which most effectively reach the residents of the municipalities	
Component Environmental Effects	MRF covering large area may disrupt local surface water drainage patterns	No effects identified	Promotion/education on Direct Cost system and 3Rs programs reduces potential for illegal dumping of waters and disruptive effects on aquatic systems including surface and ground water resources	
Component Category/ Components	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Drones located at transfer stations	Residential Promotion and Education - Promotion/education program on Direct Cost system - Promotion/education program on source reduction/pre-cycling, reuse and recycling - Rs promotion and education program - Consumer education program	

TABLE B3.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Direct Cost

Natural
Potential for Effects to Atmospheric Environment
Potential for Atmospheric Emissions

Component Net Effects	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected.
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere
Component Category/ Components	Garbage Collection and Disposal - Direct Cost system for garbage collection - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family residents not serviced by recycling community recycling community recycling community recycling community recycling community recycling contess Recycling of all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling depot

Component Net Effects	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected.	Some odours may be emitted but no effects to the amosphere are expected due to anticipated low emission levels	Potential for release of dust and exhaust to the atmosphere by collection vehicles is reduced but not eliminated Potential for dust or particles due to mulching and collections. Trismas rees is reduced but not eliminated.
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dast generating materials Regular vehicle maintenance	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	Decrease speed of collection vehicles along streets Regular sweeping of municipal streets to collect materials which may generate dust Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Odours may be released to atmosphere by compost units	Collection vehicles travelling along roads may result in release of dust and exhausts to the amosphere. Grinding or mulching of Chistmas trees as part of collection may result in release of dust to the amosphere.
Component Category/ Components	Residential Leaf and Yard Waste Collection - Curbside collection of leaf and yard waste - Drop-off depot for leaf and yard waste	Residential Household Compositing - Door-to-door distribution of backyard compositers to 80% of single family households - Pornoution of vermi-compositing to multi-family units - Backyard compositer distribution programs - Large 3-bin compositing units distributed to apartment and cooperative housing complexes - Community compositing	Other Residential Waste Diversion HIW. Toxic Taxi, Pitot Wet-Dry, White Goods Collection, White Goods Drop-Oil Special curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-oil depots for white goods Special curbside collection for bulky items

Component Net Effects	Release of harmful air emissions is contained inside permanent HHW depot Potential for effects is reduced with use of safety equipment and training, but not eliminated
Mitigation/ Enhancement	Cover trucks collecting mulched trees of parmful air emissions is contained inside permanent HHW particulate depot with features (e.g., air exchange and filter) bestign permanent HHW depot with features (e.g., air exchange and filter) prevent effects and the release of gases to the amosphere and training and training and training and equipment) in the event of accidents to contain and restrict the release of harmful gas emissions to the amosphere
Component Environmental Effects	Odours and harmful gases may be emitted from HHW collected due to the integrity of packaging or as a result of accidents (e.g. spills, leaks, vehicle upset). This may result in effects and to the atmosphere
Component Category/ Components	Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depots

Component Net Effects	Potertial for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost	No effects identified
Mitigation/ Enhancement	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining acrobic conditions and limited storage of purescible feedstocks before composting Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofiliers Minimize contact with and general control include chemical scrubbers and biofiliers open air during stredding, mixing, sorting, turning and screening of material Limit operations during adverse weather?	None required
Component Environmental Effects	Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere.	No effects identified
Component Category/ Components	Composting Facilities - Centralized windrow composting of leaf and yard waste - In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

TABLE B3.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioaeropsols within MRF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to atmosphere is reduced but not eliminated. No effects expected as a result of dust emissions.	No effects identified
Mitigation/ Enhancement	Provide ventilation system to capure building air for removal of dust and biodensosls and replace with clean air, either at work stations or for entire MRF Provide equipment to individual saff to restrict or prevent exposure to dust and bioacrosols(e.g. respirator) Daily cleaning of facility equipment and floors	Maintain area around depots to eliminate debris, litter and other materials which may generate dust	• None required
Component Environmental Effects	Processing of recyclables may generate dust and bioacrosol emissions within the facility resulting in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded	No effects identified
Component Category/ Components	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations	Residential Promotion and Education Promotion/education program on Direct Cost system Promotion/education program on source reduction/pre-cycling, reuse and recycling and recycling The promotion and education program Consumer education program Consumer education program

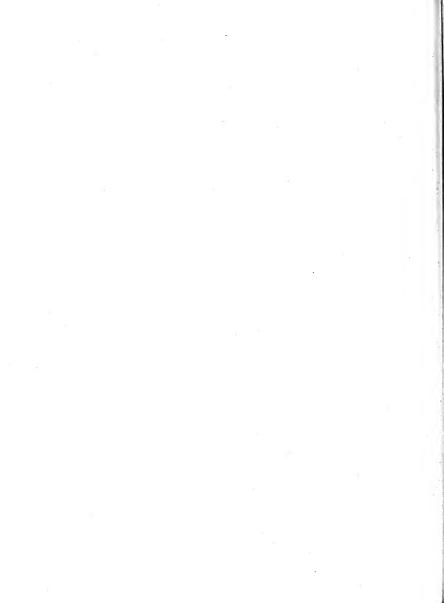






TABLE B4.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

INDICATOR: CRITERIA:

CRITERIA GROUP:

Residential Expanded Blue Box

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

TABLE B4.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Residential Household Composting - Backyard composter distribution programs - Door-to-door distribution of backyard composters to 80% of single family households - Promotion of vermi-composting to multi-family units - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	No effects identified	• None required	No effects identified
Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas t	Depots for HHW, white goods and bulky items require slining which may result in localized loss/removal of small area of forest or agricultural resources Discharge of HHW to environment due to accidents (e.g. spills, leaks, fires, vehicle upset) may impact the localized growth of terrestrial biological systems, plants and agriculture resources	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer statuors, industrial areas, landfill site) through siting process in firstall features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent discharges to the environment in the event of an accident Develop contingency measures for spills, fire control, emergency response, including staff training and available equipment.	No loss/removal of forest or agriculture resources expected due to siting depots and installing design features to prevent discharges of HHW to the crivitonment in the event of an accident Potential for loss/temoval of terrestrial systems and resources is minimized and restricted to a small localized area by installing appropriate engineered features and by implementing contingency measures in the event of an accident

TABLE B4.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Compositing Facilities • Contained windrow composting of leaf and yard waste • In-vessel composting of source separated organics	Compost facility may require significant site area depending on capacity of facility, compost method and size of curing area. Large site may result in loss/removal of terrestrial biological systems, forest and agricultural resources.	Locate compost facility in areas of compatible land use (i.e. industrial lands, landfill site, municipal works yard) through stining process	Potential for loss or removal of terrestrial systems and resources is minimized but not eliminated by site selection process
Reuse Centres and Activities • Municipal reuse centre • Private reuse centre • Non-profit reuse centre • Charitable reuse centres • Food reuse organization • Special goods exchange days	No effects identified	• None required	No effects identified
Public MRFs • Processing centre for dry recyclables • Construct new MRF or expand existing MRF	 MRFs require site area which may be of sufficient size resulting in the localized loss/temoval of terrestrial biological systems, plant life, forest and agricultural resources 	Locate MRFs in areas of compatible land use (i.e. industrial areas) through sting process	No loss or removal of terrestrial systems or resources expected due to stimg of MRFs
Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations	Depot for recyclables requires sting which may result in the localized loss or removal of a small area of forest or agricultural resources	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, commercial and industrial areas) through sting process	No loss or removal of terrestrial resources expected due to string depots

TABLE B4.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

	_	Γ			_	-	_	_	
Component	Net Effects		No effects identified						
Mitigation/	Enhancement		None required						
Component	Environmental Effects		No effects identified						
Component Category/	Components	Residential Promotion and Education	· Promotion/education program on	Expanded Blue Box program Promotion/education program on	source reduction/pre-cycling, reuse	and recycling	 3Rs promotion and education 	program	Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B4.2

SYSTEM: CRITERIA GROUP: CRITERIA:

Residential Expanded Blue Box Natural

INDICATOR:

Potential for Effects to Terrestrial Systems and Resources Potential for Disruption Effects to Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	Residential Recycling and Collection Curbside collection of Expanded Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households Community reducing centres Recycling at all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling mandated	Residential Leaf and Yard Waste Collection Curbside collection of leaf and yard waste or Drop-off depot for leaf and yard waste

TABLE B42 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing design features at HHW depots and implementing contingency measures in the event of an accident.
Mitigation/ Enhancement	• None required	Install features (e.g. sump drains, fire prevention, containment bernes) at permanent HHW depots to prevent dischages to the environment in the event of an accident Develop contingency measures for spills, fire control, encergency response including staff training and available equipment
Component Environmental Effects	No effects identified	HHW may be discharged to the environment due to accidents (e.g. spills, least, fires, vicile upset) and disrupt the localized growth of terrestrial biological systems and resources
Component Category/ Components	Residential Household Composting - Backyard composter distribution programs - Door-to-door distribution of backyard composters to 80% of single family households - Promotion of vermi-composting to multi-family units - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas trees collections of white goods Drop-Off depots for white goods Drop-off depots for white goods Drop-off depots for white goods ielens Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Toxic Taxi service

TABLE B42 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified			No effects identified		No effects identified	• No effects identified			No effects identified			
Mitigation/ Enhancement	None required			None required		None required	None required	pombo ano.		None required			
Component Environmental Effects	No effects identified			No effects identified		No effects identified		No effects identified		No effects identified			
Component Category/ Components	Composting Facilities Centralized windrow composting of leaf and yard waste	 In-vessel composting of source separated organics 	Reuse Centres and Activities	Municipal reuse centre Private treuse centre Non-profit reuse centre Chariable reuse centre Food reuse organization Special goods exchange days	Public MRFs	Processing centre for dry recyclables Construct new MRF or expand existing MRF	Residential Recycling Depots and Transfer Stations	 Drop-off depot for dry recyclables Depots located at transfer stations 	Residential Promotion and Education	 Promotion/education program on Expanded Blue Box program Promotion/education program on 	source reduction/pre-cycling, reuse and recycling	3Rs promotion and education program	Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B4.3

CRITERIA GROUP: CRITERIA: SYSTEM:

INDICATOR:

Residential Expanded Blue Box

Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	No effects identified	None required	No effects identified
Residential Recycling and Collection • Curbside collection of Expanded Blue • No effects identified	No effects identified	• None required	 No effects identified

Expanding curbside collection Collection of bins of recyclables from

Box materials

Drop-off depot for rural households residents not serviced by recycling

Drop-off depot for multi-family

multi-family units

Recycling at all multi-family buildings of greater than 6 units

No effects identified

None required

No effects identified

Collection

• Curbside collection of leaf and yard

Residential Leaf and Yard Waste Blue Box recycling mandated Community reducing centres

Engineered recycling deport

Drop-off depot for leaf and yard

waste waste

TABLE B43 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component
Components	Environmental Effects	Enhancement	Net Effects
Residential Household Composting Backyard composter distribution programs Door-to-door distribution of backyard composters to 80% of single family households Promotion of vermi-composting to multi-family units Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	No effects identified	None required	No effects identified

TABLE B4.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No loss or removal of aquatic systems including water resources expected due to installing design features at depots to prevent discharges of HHW, hold HHW collections at appropriate locations and having contingency measures in place.
Mitigation/ Enhancement	Install features (e.g. sump drains, containment berms, low permeability flooring, sie grading) at permeability flooring, sie grading) at permeant HHW depots to prevent discharges to surface and groundwater resources. Hold special HHW collections an locations away from surface and ground water resources, areas where containment of spills is available, and areas where emergency response include public works yards, transfer stadions, industrial areas and fire halls. Develop contingency measures for spills and energency response (include public works yards, transfer stadions, industrial areas and fire halls. Develop contingency measures for spills and emergency response (including staff training and available equipment) in the event of accidents at permanent and temporary depots or due to vehicle upsets
Component Environmental Effects	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the loss or removal of aquatic biological systems and water resources
Component Category/ Components	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special and weekly curbside collections of Christmas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Drop-off depots for white goods Special nourside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste (drop-off depot for household hazardous waste (HWW) Special household hazardous waste Toxic Taxi service Mobile HHW depots

TABLE B43 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No loss or removal of aquatic systems or water resources expected due to stifuing compost lacility Potential for loss or removal of aquatic systems and water resources is minimized by lacility design features to prevent discharges to surface and ground waters	No effects identified
Mitigation/ Enhancement	- Locate compost facility in an area away from surface water bodies and farninge courses. - Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water. Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management profil) and to prevent amanagement profil and to prevent surface water funds from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to ground water (e.g. birer, leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and compostion of wastes being compostic to identify and treat confaminants, as required	None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources	No effects identified
Component Category/ Components	Composting Facilities - Centralized windrow composting of leaf and yard waste - In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

TABLE B43 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	 No effects identified 	No effects identified	No effects identified
	•	•	•
Mitigation/ Enhancement	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Public MRFs • Processing centre for dry recyclables • Construct new MRF or expand existing MRF	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education - Promotion/education program on Expanded Blue Box program on Promotion/education program on source retirion/prive-cycling, reuse and recycling - 3Rs promotion and education - Residential program - Consumer education program - Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B4.4

SYSTEM:

CRITTERIA GROUP: CRITERIA:

INDICATOR:

Residential Expanded Blue Box

Natural Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Discuption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curlside collection of Expanded Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Drop-off depot for multi-family Burb of greater than 6 units Blue Box recycling mandated Engineered recycling depot	Residential Leaf and Yard Waste Collection - Curbside collection of leaf and yard waste - Dropolf depot for leaf and yard waste

TABLE B44 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT. (continued)

Component Net Effects	No effects identified			Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depois, hold HHW collections at appropriate locations and having contingency measures in place.
Mitigation/ Enhancement	None required			Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depois to prevent discharges to surface and ground water resources. Hold special HHW collections at locations away from surface and ground water resources, areas where containment of spills is available and areas where emergency response including trained staff and equipment are available. Examples of locations including unities works yards, transfer stations, industrial areas and firehalls. Develop contingency measures for apills and emergency response (including staff training and available equipment) in the event of accidents a permanent and temporary depois or due to vehicle unsess
Component Environmental Effects	 No effects identified 			HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, wehicle upset) resulting in the disruption of aquatic biological systems and water resources
Component Category/ Components	Residential Household Composting Backyard composter distribution	Door-to-door distribution of backyard composters to 80% of single family households Promotion of vermi-composting to multi-family units Large 3-bin composting units distributed to apartment and cooperative housing complexes Community composting	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off)	Special curbside collections of Chrismas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depots

TABLE B44 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachate, silt and organic materials is minimized by facility design features to prevent dischanges to surface and ground waters and by proper sting of facility	No effects identified
Mitigation/ Enhancement	Locate compost facility in an area away from surface water bodies and drainage courses. Locate compost facility in an area of soils with the capacity to attenuate leached from discharging to ground water. Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water capacity of contaminants, silt or compost matter to surface water mandf from entering compost area (e.g. storn water capacity). Install features at compost facility to prevent discharge of feathate to ground water (e.g. there saround facility). Install features at compost facility to ground water (e.g. linet, leachate to ground water (e.g. linet, leachate of prevent discharge of feathate and composition of wasters being composted to identify, remove and treat contaminants as required	None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water morlf from compost facility may disrupt surface water bodies by buildup of silt and organic materials	No effects identified
Component Category/	Composting Facilities - Centralized windrow composting of leaf and yard waste - In-vessel composting of source separated organics	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

TABLE B44 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Public MRFs • Processing centre for dry recyclables • Construct new MRF or expand existing MRF	MRF covering large area may disrupt local surface water drainage patterns	Locate facility in compatible area (e.g. industrial areas, landfill site, public works yard) with storm water management features in place (e.g. storm sewers, storm water retention pond)	No disruption to surface water resources expected due to string of MRF
Residential Recycling Depots and Transfer Stations - Dropolit depot for dry recyclables beared at transfer estime.	No effects identified	None required	No effects identified
Residential Promotion and Education Promotion/education program on Promotion/education Program on	No effects identified	None required	No effects identified
Explaned a true too, poglam promotion/education program on source reduction/pre-cycling, reuse and recycling a Rs promotion and education program Consumer education program			

TABLE B4.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA:

INDICATOR:

Residential Expanded Blue Box Natural

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

Component Net Effects	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	Potential for release of dust to the amosphere by collection vehicles is reduced but not climinated. Dust and exhaust emissions are still expected	 Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Expanded Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units moderated by recycling residents not serviced by recycling Drop-off depot for rural households Drop-off depot for rural households Community reducing centres Recycling at all multi-family buildings of greater than 6 units Blue Box recycling and centres Engineered recycling depot	Residential Leaf and Yard Waste Collection Curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste

TABLE B45 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Some odours may be emitted but no effects to the atmosphere are expected due to anticipated low emission levels	Potential for release of dust and exhaust to the amosphere by collection vehicles is reduced but not eliminated Potential for dust or particles due to mulching and collecting Christmas trees is reduced but not eliminated to Release of harmful air emissions is contained inside permanent HHW depoil Potential for effects is reduced with use of safety equipment and training, but not eliminated.
Mitigation/ Enhancement	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	Decrease speed of collection vehicles along streets Regular sweeping of municipal streets to collect materials which may generate during materials which may generate whiche maintenance Cover trucks collecting mulched trees to prevent release of dust and particulate Design permanent HHW depot with features (e.g. air exchange and filter) to collect harmful air emissions to prevent effects and the release of gases to the amosphere
Component Environmental Effects	Odours may be released to amosphere by compost units	Collection vehicles travelling along roads may result in release of dust and exhaust to the amosphere. Grinding or mulching of Christmas trees as part of collection may result in release of dust to the amosphere. Odours and harmful gases may be emitted from HHW collected due to the integrity of packaging or as a result of accidents (e.g. spills, leads, vehicle upset). This may result in effects to the amosphere.
Component Category/ Components	Residential Household Composting - Backyard composter distribution programs - Door-to-door distribution of backyard composters to 80% of single family households - Promotion of vermi-composting to multi-family units - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Community composting	Other Residential Waste Diversion HIW. Toxic Taxi, Pitot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Special curbside collections of Christmas trees Special curbside collections of Christmas trees Special curbside collection for bully ilems Permanent drop-off depot for Neusehold hazardous waste (HHW) Special household hazardous waste drop-off days Toxic Taxi service Mobile HHW depots Toxic Taxi service

TABLE B45 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

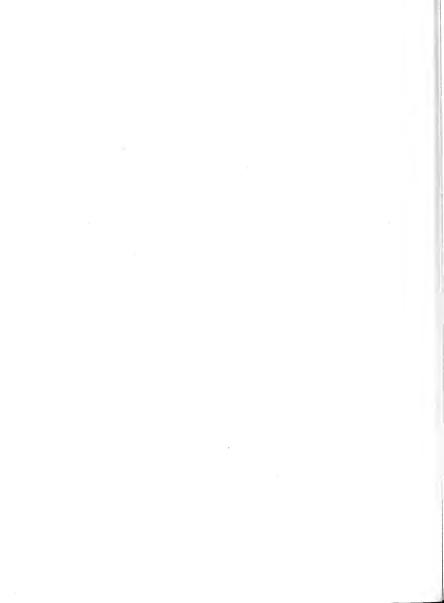
Component Net Effects			ic - Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost
Mitigation/ Enhancement	Provide staff working with HHW with appropriate safety equipment and training. Develop contingency measures for spills and emergency response (including staff training and equipment) in the event of accidents to contain and restrict the release of harmful gas emissions to the amosphere.		Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining aerobic conditions and limited storage of purescible feedstocks before composting feedstocks before composting install emission control in for the composting of the composting of the control include chemical scrubbers and biofilters and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters and biofilters and biofilters and screening of material exposure to open air during and screening of material Limit operations during adverse weather.)
Component Environmental Effects			Air emissions in the broad categories of dust, bioacrosols and gaseous emissions (volatile organic compounds) are refeased from compounds) are refeased from compour facilities. However, concentrations of these contaminants are generally very low or nondeuctable with no effect on the atmosphere.
Component Category/ Components		Composting Facilities	Centralized windrow composting of leaf and yard waste leaf and yard waste lar-wessel composting of source separated organics

TABLE B4.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

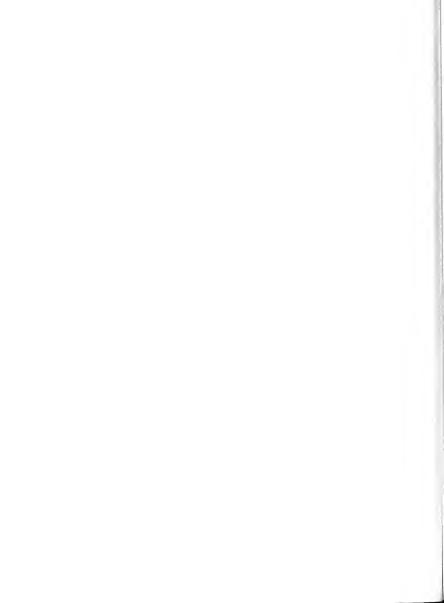
Component Net Effects	No effects identified	Emissions to atmosphere will be generated in the form of dust and bioacrossis within MRF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to amnosphere is reduced but not eliminated. No effects expected as a result of dust emissions.
Mitigation/ Enbancement	None required	Provide ventilation system to capture building air for removal of dust and bioacrosols and replace with clean air either at work stations or for entire MRF Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols/eig, respirator) and bioacrosols/eig, respirator) and dioors	Maintain area around depois to climinate debris, litter and other materials which may generate dust
Component Environmental Effects	No effects identified	Processing of recyclables may generate dust and bioacrosol emissions within the facility resuling in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded
Component Category/ Components	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	Public MRFs • Processing centre for dry recyclables • Construct new MRF or expand existing MRF	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations

TABLE B4.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Components Environmental Effects Mitigation/ Environmental Effects Mitigation/ Enhancement Residential Promotion and Education • No effects identified • None required • Promotion/education program on source reduction/pre-cycling, reuse and recycling and recycling • None required • Sax promotion and education program • No effects identified • None required • Promotion/education program of covering • No effects identified • None required				
No effects identified	onent Category/ omponents	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
No effects identified Page 1.0	omotion and Education			
Aducation program on choice, reuse confined and education in and education program.	education program on slue Box program	No effects identified	None required	No effects identified
tion/pre-cycling, reuse g on and education ducation program	ducation program on			
lg ion and education ducation program	ction/pre-cycling, reuse			
ion and education	20			
ducation program	ion and education			
education program				
	ducation program			







GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B5.1

SYSTEM:

CRITERIA GROUP:

CRITERIA:

INDICATOR:

Residential Wet/Dry Natural

Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	• None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings in three streams Collection of residential garbage from multi-family units in three streams Self haul of garbage Regional recycling legislation	Residential Recycling and Collection - Provide carts to all single family households - Separation of waste into three - Steparation of waste into three - Steparation of some control of the collection of the collection of serviced by recycling residents not serviced by recycling	Residential Leaf and Yard Waste Collection Seasonal separate collection of leaf and yard waste Drop-off depot for leaf and yard waste

TABLE B5.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households - Lage 3-bin composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households	No effects identified	None required	No effects identified	
Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas and weekly curbside Chris	Depots for HHW, white goods and bulky items require sting which may result in localized losylemoval of small area of forest or agricultural resources Dischage of HHW to environment due to accidents (e.g., spills, leaks, fires, vehicle upset) may impact the localized growth of terrestrial biological systems, plants and agriculture resources	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer statuors, industral areas, handfill site) through sting process Install features (e.g. sump drains, fire prevarior), confainment berms at permanent HHW depots to prevent discharges to the environment in the event of an accident. Develop contingency measures for spills, fire control, emergency response, including staff training and available equipment.	No loss/removal of forest or agriculture resources expected due to sing depors and installing design features to prevent dischages of HHW to the environment in the event of an accident Potential for loss/removal of terrestrial systems and resources is minimized and restricted to a small localized area by installing appropriate engineered features and by implementing contingency measures in the event of an accident	

TABLE B5.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for loss or removal of terrestrial systems and resources is minimized but not eliminated by site selection process and optimal design of compost facilities	No effects identified	No loss or removal of terrestrial systems or resources expected due to stimg of MRFs	No loss or removal of terrestrial resources expected due to sting depots
Mitigation/ Enhancement	Locate compost facilities in areas of compatible land use (i.e. industrial lands, landfill site, municipal works yard) through sting process Design facilities with optimal process method and capacity to reduce number of facilities and area required number of facilities and area required.	• None required	 Locate MRFs in areas of compatible land use (i.e. industrial areas) through string process 	 Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, commercial and industrial areas) through siting movese
Component Environmental Effects	Compost facility may require significant site area depending on capacity of facility, compost method and size of curing area. Large site or numerous sites may result in loss/fernoval of terrestrial biological systems, forest and agricultural resources.	No effects identified	 MRFs require site area, which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agricultural resources 	 Depot for recyclables requires sting which may result in the localized loss or removal of a small area of forest or agricultural resources
Component Category/ Components	Composting Facilities Central composting facilities (invessel or windrow) for composting of source separated household organics (wet stream) Centralized windrow composting of leaf and yard waste	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	Public MRFs New MRF or expand existing MRFs to process larger dry stream of recyclables	Residential Recycling Depots and Transler Stations • Drop-off depot for dry recyclables • Depots located at transfer stations

TABLE B5.1
GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Residential Promotion and Education			
Promotion/education program for Wet/Dry system	No effects identified	None required	No effects identified
Promotion/education program for promotion/education program for promotion program for program for promotion program for promotion program for promotion program for promotion program for progr			
and recycling			
 3Rs promotion and education 			
program			
Consumer education program			

TABLE B5.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

Residential Wet/Dry Natural

CRITERIA GROUP: Na CRITERIA: Pol

INDICATOR:

Potential for Effects to Terrestrial Systems and Resources Potential for Disruption Effects to Terrestrial Systems and Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal			
Curbside collection or residential garbage from single family dwellings in three streams Collection of residential garbage from multi-family units in three streams Self haul of garbage Regional recycling legislation	No effects identified	None required	No effects identified
Residential Recycling and Collection		e	
Provide carts to all single family households Separation of waste into three smeans.	No effects identified	None required	No effects identified
 Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households 			•
Residential Leaf and Yard Waste Collection	No afforts identified	Position and A	No officers identified
 Seasonal separate collection of leaf and yard waste Drop-off depot for leaf and yard waste 	יוס בוכרף ותכווחונת	rome telamon	יאס כונכיף ותכוווונס

TABLE B5.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing design features at HHW depots and implementing contingency measures in the event of an accident
Mitigation/ Enhancement	None required	Install features (e.g. sump drains, fire prevention, containment berms) at permanent HHW depots to prevent discharges to the cavironment in the event of an accident Develop contingency measures for spills, fire control, emergency response including staff training and available equipment
Component Environmental Effects	No effects identified	HHW may be discharged to the environment due to accidents (e.g. spills, leaks, fires, vedicle upeal) and disrupt the localized growth of terrestrial biological systems and resources
Component Category/ Components	Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas trees Chrismas trees Chrismas trees Chrismas trees Special curbside collections of white goods - Special curbside collection for bulky items - Permanent drop-off depot for household hazardous waste (HHW) - Special household hazardous waste (moy-off days - Toxic Taxi service - Toxic Taxi service - Mobite HHW depots

TABLE B5.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified	No effects identified
Component Category/ Components	Composting Facilities - Central composting facilities (invessel or windrow) for composting of source separated household organics (wet stream) - Centralized windrow composting of leaf and yard waste	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	Public MRFs New MRF or expand existing MRFs to process larger dry stream of recyclables	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations

TABLE BS2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component
Components	Environmental Effects	Enhancement	Net Effects
Residential Promotion and Education Promotion/education program for weyDry system Promotion/education program for source reduction/pre-cycling, reuse and recycling 3Rs promotion and education program	No effects identified	None required	No effects identified

TABLE B5.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Wet/Dry

Natural Potential for

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings in three streams - Collection of residential garbage from multi-family units in three streams - Self hald of garbage - Self hald of garbage - Regional recycling legislation	Residential Recycling and Collection - Provide carts to all single family households scharation of waste into three streams - Drop-off depot for multi-family residents not serviced by recycling residents not serviced by recycling - Drop-off depot for tural households	Residential Leaf and Yard Waste Collection Seasonal separate collection of leaf and yard waster leaf and sort

TABLE B5.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No loss or removal of aquatic systems including water resources expected due to installing design features at depots to prevent discharges of HHW, hold HHW collections at appropriate locations and having contingency measures in place
Mitigation/ Enhancement	• None required	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and groundwater resources as becations away from surface and ground water resources, areas where containment of spills is available, and areas where emergency response including trained saff and equipment are available. Examples of locations including their works yards, transfer stations, industrial areas and fire halls. Develop contingency measures for spills and energency response (including staff training and available equipment) in the event of accidents a permanent and temporary depots or due to vehicle upsets
Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the loss or removal of aquatic biological systems and water resources
Component Category/ Components	Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Christmas trees Christmas trees Christmas trees Special curbside collections of Christmas trees Christmas trees Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste Amop-off days Toxic Taxi service Mobile HHW depots

TABLE BS3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No loss or removal of aquatic systems or water resources expected due to siting compost lacility Potential for loss or removal of aquatic systems and water resources is minimized by facility design features to prevent discharges to surface and ground waters	No effects identified
Mitigation/ Enhancement	Locate compost facility in an area away from surface water bodies and drainage courses. Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water from discharge of contaminants to prevent discharge of contaminants to surface water (e.g. storm water management profi) and to prevent surface water nunoff from entering compost area (e.g. berms, ditches around facility) insulf features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composited to identify and treat contaminants, as required	. None required
Component Environmental Effects	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquaic biological systems and water resources	No effects identified
Component Category/ Components	Composting Facilities - Central composting facilities (invessel or windrow) for composting of source separated household organics (wet stream) - Centralized windrow composting of leaf and yard waste	Reuse Centres and Activities • Municipal reuse centre • Private reuse centre • Non-profit reuse centre • Charlable reuse centre • Food reuse organization • Special goods exchange days

TABLE B5.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	fied	fied	fied
Com	No effects identified	No effects identified	No effects identified
Mitigation/ Enbancement	None required	None required	• None required
Component Environmental Effects	No effects identified	No effects identified	• No effects identified
Component Category/ Components	Public MRFs New MRF or expand existing MRFs to process larger dry stream of recyclables	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education - Promotion/education program for Wet/Dry system - Promotion/education program for source reduction/pre-cycling, reuse and recycling - SRs promotion and education program - Consumer education program - Consumer education program

TABLE B5.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

CRITERIA GROUP: CRITERIA: SYSTEM:

INDICATOR:

Residential Wet/Dry Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal			
Curbside collection of residential garbage from single family dwellings in three streams Collection of residential garbage from multi-family units in three streams Self hall of garbage. Recional reveviin pesidation	No effects identified	• None required	No effects identified
Residential Recycling and Collection			
Provide carts to all single family households Separation of waste into three	No effects identified	None required	No effects identified
streams • Drop-off depot for multi-family residents not serviced by recycling • Drop-off depot for rural households			
Residential Leaf and Yard Waste Collection	• No effects identified	None required	No effects identified
 Seasonal separate collection of leaf and yard waste Drop-off depot for leaf and yard waste 		-	

TABLE B5.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depots, hold HHW collections at appropriate locations and having contingency measures in place
Mitigation/ Enhancement	None required	Install features (e.g., sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depois to prevent discharges to surface and ground water resources. Hold special HHW collections at locations away from surface and ground water resources, areas where containment of spills is available and areas where emergency response including trained staff and equipment are available. Examples of locations include public works yards, transfer surious, industrial areas and fireballs. Develop contingency measures for spills and emergency response (including staff training and available equipment) in the event of accidents at permanent and temporary depois of the bo vehicle unsess
Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upse) resulting in the disruption of aquatic biological systems and water resources
Component Category/ Components	Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households - Large 3-bit composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Dap-Off) Special curbside collections of Christmas trees Christmas trees Christmas trees collections of white goods Drop-off depots for white goods Drop-off depots for white goods Special curbside collection for bulty items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (drop-off days) Toxic Taxi service Mobile HHW depots

TABLE B54 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachtae, sail and organic materials is minimized by facility design features to prevent discharges to surface and ground waters and by proper sting of facility	No effects identified
Mitigation/ Enhancement	Locate compost facility in an area away from surface water bodies and drainage courses. Locate compost facility in an area of soils with the capacity to attenuate leachar from discharging to ground water. Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storm water management pond) and to prevent surface water unoff from entering compost area (e.g. berms, ditches around facility). Install features at compost facility to ground water (e.g. lirer, leachate to ground water (e.g. lirer, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being treat contaminants as required and reat contaminants as required.	None required
Component Environmental Effects	Compost facility may generate leachare containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water runoff from compost facility may disrupt surface water bodies by buildup of sit and organic materials	No effects identified
Component Category/ Components	Composting Facilities Central composting facilities (invessel or windrow) for composting of source separated household organics (wet stream) Centralized windrow composting of leaf and yard waste	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charlable reuse centres Food reuse organization Special goods exchange days

TABLE B54 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No disruption to surface water resources expected due to sting of MRF	No effects identified	No effects identified	
Mitigation/ Enhancement	 Locate facility in compatible area (e.g. industrial areas, landfill site, public works yard) with storm water management features in place (e.g. storm sewers, storm water retention pond) 	• None required	• None required	
Component Environmental Effects	MRF covering large area may disrupt local surface water drainage patterns	No effects identified	No effects identified	
Component Category/ Components	Public MRFs New MRF or expand existing MRFs to process larger dry stream of recyclables	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Dropsis located at transfer stations	Residential Promotion and Education - Promotion/cducation program for Wet/Dry System - Promotion/cducation program for source reduction/pre-cycling, reuse and recycling - Str promotion and education	Program Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B5.5

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Wet/Dry Natural

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal			
Curbside collection of residential garbage from single family dwellings in three streams Collection of residential garbage from multi-family units in three streams Soft haul of garbage of	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected
Residential Recycling and Collection			
Provide carts to all single family households Separation of waste into three streams Drop-off depot for multi-family residents not serviced by recycling Proceed 4 about for mrel households	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dast generating materials Regular vehicle maintenance	Potential for release of dust to the amosphere by collection vehicles is reduced but not climinated. Dust and exhaust emissions are still expected
Residential Leaf and Yard Waste Collection Seasonal separate collection of leaf and yard waste and yard waste brop-off depot for leaf and yard waste	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dass generating materials Regular vehicle maintenance	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected

TABLE B55 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Some odours may be emitted but no effects to the amosphere are expected due to anticipated low emission levels	Potential for release of dust and exhaust to the atmosphere by collection vehicles is reduced but not eliminated. Potential for dust or particles due to mulching and collecting Christmas trees is reduced but not eliminated. Release of harmful air emissions is contained inside permanent HHW depot. Potential for effects is reduced with use of safety equipment and training, but not eliminated.
Mitigation/ Enhancement	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	along streets along streets to collect materials which may generate dust co collect materials which may generate dust Regular verbicle maintenance Cover trucks collecting mulched trees to prevent release of dust and Particular Part
Component Environmental Effects	Odours may be released to amosphere by compost units	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere. Grinding or mutching of Christmas trees as part of collection may result in release of dust to the atmosphere. Odours and harmful gases may be emitted from HHW collected due to emitted from HHW collected due to the integrity of packaging or as a result of accident (e.g. spills, leaks, vehicle upset). This may result in effects to the atmosphere.
Component Category/ Components	Residential Household Compositing - Door-to-cloor distribution of backyard composters to 80% of single family households - Large 3-lin compositing units distributed to apartment and cooperative housing complexes Vermi-composing for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Oil) Special collections of Christmas trees Special and weekly curbside collections of Christmas trees Special and weekly curbside collections of Special and weekly curbside collections of white goods Drop-Oil depots for white goods Special curbside collection for bulky items Parament drop-oil depot for household hazardous waste (HHW) Special household hazardous waste dop-oil days Toxic Taxi service Mobile HHW depots

TABLE BS.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for atmospheric emissions is reduced but not eliminated. No effects expected that to air emissions from compost. Effects may result due to nature of wet waste feedstock		No effects identified
Mitigation/ Enhancement	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining aerobic conditions and limited storage of purescable feedstocks before composting editories and innied storage of purescable feedstocks before composting. Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters Minimize contact with and general exposure to open air during and screening of material exposure to open air during and screening of material Limit operations during adverse weather. Thoride equipment to individual staff to restrict or prevent exposure to dust, hioaerosols and VOCs (e.g. respirator) Dally cleaning of facility equipment and floors		None required
Component Environmental Effects	Air emissions in the broad categories of dust, bioaerosols and gaseous emissions (volatie organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low on non-detectable with no effect on the armosphere. Potential for effects may be greater for composing of wet stream due to nature of the feedstock.		No effects identified
Component Category/ Components	Composting Facilities Certal composting facilities (invesse) or windrow) for composting of source separated household organics (wet stream) Centralized windrow composting of leaf and yard waste	Reuse Centres and Activities	Municipal reuse centre Private reuse centre Non-profit reuse centre Chariable reuse centres Food reuse organization Special goods exchange days

TABLE B5.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioacrossis within MFF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to amnosphere is reduced but not eliminated. No effects expected as a result of dust emissions	No effects identified
Mitigation/ Enhancement	Provide ventilation system to capture building air for removal of dust and bloacnosols and replace with clean air, cither at work stations or for entire MRP. Provide equipment to individual staff to restrict or prevent exposure to dust and bioacnosols(e.g. respirator) Daily cleaning of facility equipment and floors	Maintain area around depots to eliminate debris, litter and other materials which may generate dust	None required
Component Environmental Effects	Processing of recyclables may generate dust and bioaerrosol emissions within the facility resulting in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded	No effects identified
Component Category/ Components	Public MRFs New MRF or expand existing MRFs to process larger dry stream of recyclables	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education - Promotion/education program for Wet/Dry system - Promotion/education program for source reduction/pre-cycling, reuse and recycling and education program. - 3Rs promotion and education program or program. - Chestune education program.





TABLE B6.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

Residential Mixed Solid Waste Processing Natural

ryanua Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units multi-family units Drop-off depot for multi-family residents not serviced by recycling Drop-off depot for rural households Ornop-off depot for rural households Community recycling centres Recycling at all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling depot	Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

TABLE B6.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No loss/removal of forest or agriculture resources expected due to siting depots and installing design features to prevent distalarges of HHW to the environment in the event of an accident Potential for loss/removal of terrestrial systems and resources is minimized and restricted to a small localized area by installing appropriate engineered features and by implementing contingency measures in the event of an accident
Mitigation/ Enhancement	None required	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations; industrial areas, landfill site) through stiting process Install features (e.g. sump drains, fire prevention, condainment berms) at permanent HHW depots to prevent discharges to the environment in the discharges to the environment in the event of an accident Develop contingency measures for spills, fire control, emergency ersponse, including staff training and available equipment.
Component Environmental Effects	No effects identified	Depots for HHW, white goods and bulky items require sting which may result in localized lossfremoval of small area of forest or agricultural resources Discharge of HHW to environment due to accidents (e.g. spills, leaks, fires, vehicle upset) may impact the biological systems, plants and agriculture resources
Component Category/ Components	Residential Household Compossing - Door-to-door distribution of backyard composters to 80% of single family households - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) - Special curbside collections of Chrismas trees - Special and weekly curbside collections of white goods - Drop-Off depots for white goods - Drop-Off depots for white goods - Drop-Off depots for white goods items - Permanent drop-off depot for household hazardous waste (HHW) - Special tousshold hazardous waste dop-off days - Toxic Taxi Service - Mobile HHW depots

TABLE B6.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (confinued)

Component Net Effects	Potential for loss or removal of terrestrial systems and resources is minimized but not eliminated by site selection process .	No effects identified	No loss or removal of terrestrial systems or resources expected due to string of MRFs	No loss or removal of terrestrial resources expected due to sting depots
Mitigation/ Enhancement	Locate processing and compost facilities in areas of compatible land use (i.e. industrial lands, landfill site, municipal works yard) through stiing process	None required	Locate MRFs in areas of compatible land use (i.e. industrial areas) through stiing process	Locate depots in areas of compatible land use (i.e. municipal works yards, transfer stations, commercial and industrial areas) through sting process
Component Environmental Effects	Mixed waste processing and compost facilities may require significant site area depending on capacity of facility, compost method and size of curing area. Large site may result in loss/removal of terrestrial biological systems, forest and agricultural resources.	No effects identified	MRFs require site area which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agricultural resources	Depot for recyclables requires sting which may result in the localized loss or removal of a small area of forest or agricultural resources
Component Category/ Components	Composting Facilities Centralized windrow composting of leaf and yard waste In-vessel composting of source separated organics New mixed waste processing and composting facility	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Dépots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations

TABLE B6.1 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Component Environmental Effects Mitigation/ Enhancement Component Net Effects Residential Promotion and Education • No effects identified • None required • No effects identified • Promotion/bre-cycling, reuse and recycling, reuse program • No effects identified • No effects identified • 3Rs promotion and education program • No effects identified • No effects identified				
No effects identified None required	Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
No effects identified None required None required	lucation			
uo ui	am on g, reuse	No effects identified	None required	No effects identified
	=			
	E			

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B6.2

SYSTEM:

CRITTERIA GROUP: CRITTERIA:

INDICATOR:

Residential Mixed Solid Waste Processing

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Disruption Effects to Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings Collection of residential garbage from multi-family units Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units Dropoff depot for multi-family residents not serviced by recycling Dropoff depot for rural households Community recycling centes Recycling at all multi-family Mercycling at all multi-family But Box recycling mandated Engineered recycling depot	Residential Leaf and Yard Waste Collection Curbisde collection of leaf and yard waste Drop-off depot for leaf and yard waste

TABLE B6.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption of terrestrial systems and resources is minimized and restricted to a small localized area by installing design features at HHW depots and implementing contingency measures in the event of an accident.
Mitigation/ Enhancement	• None required	Install features (e.g. sump drains, fire prevention, containment berms) at permeant HHW depost to prevent discharges to the environment in the event of an accident Develop contingency measures for spills, fire control, energency response including staff training and available equipment
Component Environmental Effects	No effects identified	HHW may be discharged to the environment due to accidents (e.g. spills, leaks, fires, whele upext) and disrupt the localized growth of terrestrial biological systems and resources
Component Category/ Components	Residential Household Composting Door-to-door distribution of backyard composters to 80% of single family households Large 3-bin composting units distributed to apartment and cooperative housing complexes Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas trees Special and weekly curbside collections of white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste drop-off agys Toxic Taxi service Mobile HHW depots Mobile HHW depots

TABLE B6.2 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component
Components Composing Facilities	Environmental Effects	Emancement	ואם בווכרפ
Centralized windrow composting of leaf and yard waste leaf and yard waste leaf separated organics separated organics New mixed waste processing and composting facility.	No effects identified	None required	No effects identified
Reuse Centres and Activities			
Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	No effects identified	None required	No effects identified
Public MRFs			
Processing centre for dry recyclables Improvements to existing MRFs	No effects identified	None required	No effects identified
Residential Recycling Depots and Transfer Stations		None required	No effects identified
 Drop-off depot for dry recyclables Depots located at transfer stations 	No effects identified	Point John Tolland	
Residential Promotion and Education			
Promotion/education program on source reduction/pre-cycling, reuse	No effects identified	None required	No effects identified
and recycling 3Rs promotion and education			
program Consumer education program			

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B6.3

SYSTEM:

CRITERIA GROUP:

CRITERIA:

INDICATOR:

Natural

Residential Mixed Solid Waste Processing

Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self hauf of garbage - Regional recycling legislation	No effects identified	None required .	No effects identified
Residential Recycling and Collection - Curbside collection of Blue Box materials - Expanding curbside collection - Collection of bins of recyclables from multi-family units - Drop-off depot for multi-family residents not serviced by recycling Community recycling centres - Community recycling centres - Orompority recycling centres - Recycling at all multi-family buildings of greater than 6 units - Blue Box recycling mandated - Engineered recycling depot	No effects identified	• None required	No effects identified
Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Dropoff depot for leaf and yard waste	No effects identified	None required	No effects identified

TABLE B6.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No loss or removal of aquatic systems including water resources expected due to installing design features at depots to prevent discharges of HHW hold HHW collections at appropriate locations and having contingency measures in place
Mitigation/ Enhancement	None required	Install features (e.g. sump drains, containment berms, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and groundwater resources surface and ground water resources, areas where containment of spills is available, and areas where emergency response include public works yards, transfer stations, industrial areas and fire halfs. Develop contingency measures for stations, industrial areas and fire halfs. Develop contingency measures for spills and emergency response (including staff training and available emergency response (including staff training and available dequipment) in the event of accidents at permanent and temporary depots of due to vehicle upsets
Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spills, leaks, vehicle upset) resulting in the loss or removal of aquaic biological systems and water resources
Component Category/ Components	Residential Household Composting - Door-to-door distribution of backyard composters to 80% of single family households. - Large 3-bin composting units distributed to apartment and cooperative housing complexes - Vermi-composting for multi-family households.	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christmas trees Special curbside collections of white goods Special curbside collections of white goods Special curbside collection for bulky items Drop-Off depots for white goods Special curbside collection for bulky items Special though and any off depots for household hazardous waste (HHW) Special household hazardous waste (HHW) Special household hazardous waste fanged and policy flays Toxic Taxi service Mobile HHW depots

TABLE B6.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No loss or removal of aquatic systems or water resources expected due to stim processing and compost facilities Potential for loss or removal of aquatic systems and water resources is minimized by facility design features to prevent discharges to surface and ground waters.	No effects identified
Mitigation/ Enhancement	- Locate processing and compost facilities in an area away from surface water bodies and drainage courses - Locate processing and compost facilities in an area of sols with the capacity to attendate leachate from discharging to ground water install features a processing and compost facilities to prevent officharge of contaminants to surface water (e.g. storm water management pond) and to prevent surface water moff from entering compost area (e.g. berms, ditches around facility) - Install features at processing and compost facilities to prevent discharge of leachate to ground water (e.g. liner, leachate to ground water collected on-site, leachate and compostition of wastes being compostion of wastes being compostion of wastes being composition of wastes being composition of wastes being composition is a serviced confaminants, as required	None required
Component Environmental Effects	Mixed waste processing and compost facilities may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources	No effects identified
Component Category/ Components	Composting Facilities - Centralized windrow composting of leaf and yard waste - In-vessel composting of source separated organics - New mixed waste processing and composting facility	Reuse Centres and Activities - Municipal reuse centre - Private reuse centre - Non-profit reuse centre - Charlable reuse centres - Food reuse organization - Special goods exchange days

TABLE B6.3 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Component Environmental Effects Mitigation/ Enhancement Component Processing Component Processing centre for dry recyclables • No effects identified • None required • No effects identified Improvements to existing MRFs • No effects identified • No effects identified • No effects identified • Drop-off depot for dry recyclables • No effects identified • No effects identified • No effects identified • Promotion/education program on source reduction/pre-cycling, reuse and recycling and education of education of education of equation of education of equation of education of equation of education of equation of education of education of education of education of equation of education of education of education of education of equation of education of ed									
Component Environmental Effects None requ None requ None requ None requ	Component Net Effects		No effects identified	No effects identified			No effects identified		
N N N N N N N N N N N N N N N N N N N	Mitigation/ Enhancement		None required	None required	pomba onor		None required		
Component Category/ Components Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Drop-off depot for dry recyclables • Depots located at transfer stations Residential Promotion and Education • Promotion/education program on source reduction/pre-cycling, reuse and recycling • 3Rs promotion and education program	Component Environmental Effects		No effects identified		No effects identified		No effects identified		
	Component Category/ Components	Public MRFs	oles .	Residential Recycling Depots and Transfer Stations	 Drop-off depot for dry recyclables Depots located at transfer stations 	Residential Promotion and Education	 Promotion/education program on source reduction/pre-cycling, reuse 	and recycling 3Rs promotion and education	program Consumer education program

GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE B6.4

CRITERIA GROUP: SYSTEM:

INDICATOR: CRITERIA:

Residential Mixed Solid Waste Processing Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
Garbage Collection and Disposal - Curbside collection of residential garbage from single family dwellings - Collection of residential garbage from multi-family units - Self haul of garbage - Regional recycling legislation	No effects identified	None required	No effects identified	
Residential Recycling and Collection Curbside collection of Blue Box materials Expanding curbside collection Collection of bins of recyclables from multi-family units To Drop off depot for multi-family residents not serviced by recycling residents not serviced by recycling or Drop-off depot for rural households Community recycling centres Recycling at all multi-family buildings at greater than 6 units Blue Box recycling mandated Engineered recycling depot	No effects identified	• None required	No effects identified	
Residential Leaf and Yard Waste Collection • Curbside collection of leaf and yard waste • Dropo for leaf and yard waste	No effects identified	None required	No effects identified	

TABLE B64 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for disruption to aquatic systems including water resources is minimized due to installing design features at depots, hold HHW collections at appropriate locations and having contingency measures in place
Mitigation/ Enhancement	None required	 Install features (e.g. sump drains, containment berns, low permeability flooring, site grading) at permanent HHW depots to prevent discharges to surface and ground water resources. Hold special HHW collections at locations away from surface and ground water resources, areas where containment of spills is available and areas where emergency response including trained staff and equipment are available. Examples of locations include public works yards, transfer stations, industrial areas and firchalls. Develop contingency measures for stations, industrial areas and firchalls. Develop contingency measures for stations staff training and available equipment) in the event of accidents at permanent and temporary depots of due to vehicle uposes
Component Environmental Effects	No effects identified	HHW may be discharged to surface water and ground water resources due to accidents (e.g. spils, leaks, vehicle upse) resulting in the disruption of aquatic biological systems and water resources
Component Category/	Residential Household Composting Door-to-door distribution of backyard composters to 80% of single family households Large 3-lin composting units distributed to aparment and cooperative housing complexes Vermi-composting for multi-family households	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Chrismas trees Chrismas trees Chrismas trees collections of white goods Drop-off depots for white goods Drop-off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special household hazardous waste (apply for household hazardous waste drop-off asys Toxic Taxi service Mobile HHW depots

TABLE B6.4 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Potential for disruption to aquatic systems and water resources due to leachtain, salt and organic materials is minimized by leaching design features to prevent dischanges to surface and ground waters and by proper stiting of facility	No effects identified
Mitigation/ Enhancement	Locate processing and compost facilities in an area away from surface water bodies and drainage courses Locate processing and compost facilities in an area of soils with the capacity to attenute leachate from dischaging to ground water of hisalf features at processing and compost facilities to prevent dischage of contaminants, silt or dompost facilities to prevent dischage of contaminants, silt or dompost area to get, berns, diches around facility. Install features at processing and compost facilities to prevent dischage of feathare to ground water from entring compost facilities to prevent dischage of feathare to ground water (e.g. liner, leachate to ground water dischage of feathare to ground water of composition of wastes being composted to defaulty, remove and treat contaminants as required	None required
Component Environmental Effects	Mixed waste processing and compost facilities may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water runoff from mixed waste processing and compost facilities may disrupt surface water bodies by buildup of silt and organic materials	No effects identified
Component Category/ Components	Composting Facilities • Centralized windrow composting of leaf and yard waste. • In-vessel composting of source separated organics. • New mixed waste processing and composting facility	Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Chariable reuse centres Food reuse organization Special goods exchange days.

TABLE B64 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

				\neg
Component Net Effects	No disruption to surface water resources expected due to sting of MRF	No effects identified	No effects identified	
Mitigation/ Enhancement	 Locate facility in compatible area (e.g. industrial areas, landfill site, public works yard) with storm water management features in place (e.g. storm sewers, storm water retention pond) 	None required	None required	
Component Environmental Effects	MRF covering large area may disrupt local surface water drainage patterns	No effects identified	No effects identified	
Component Category/ Components	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations Drop-off depot for dry recyclables Depots located at transfer stations	Residential Promotion and Education • Promotion/education program on source reduction/pre-cycling, reuse and recycling • 3Rs promotion and education program	 Consumer education program

TABLE B6.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT

CRITERIA GROUP: SYSTEM:

Residential Existing/Committed

Natural Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

INDICATOR: CRITERIA:

Component Net Effects	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected.	Potential for release of dust to the amosphere by collection vehicles is reduced but not eliminated. Dust and exhaust emissions are still expected	Potential for release of dust to the atmosphere by collection vehicles is reduced but not eliminated. Dust and exhattst emissions are still expected.
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance	Decrease speed of collection vehicles Regular sweeping of municipal streets to collect dust generating materials Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along reads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere
Component Category/ Components	Garbage Collection and Disposal Curbside collection of residential garbage from single family dwellings. Collection of residential garbage from multi-family units. Self haul of garbage Regional recycling legislation	Residential Recycling and Collection Curbside collection of Blue Box materials Expanding cuthside collection Collection of bins of recyclables from multi-family units Dropooff depot for multi-family residents not serviced by recycling community recycling community recycling controls Community recycling centres Recycling at all multi-family buildings of greater than 6 units Blue Box recycling mandated Engineered recycling depoil	Residential Leaf and Yard Waste Collection Curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste

TABLE B6.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (confinued)

Component Net Effects	Some odours may be emitted but no effects to the amosphere are expected due to anticipated low emission levels	Potential for release of dust and exhaust to the amosphere by collection vehicles is reduced but not eliminated Potential for dust or particles due to mulching and collecting Christmas tress is reduced but not eliminated Release of harmful air emissions is contained inside permanent HHW depot Potential for effects health is reduced with use of safety equipment and training, but not eliminated
Mitigation/ Enhancement	Operate and maintain compost unit as per instructions or as necessary to achieve proper conditions such that compost does not emit odours	Decrease speed of collection vehicles along streets Regular sweeping of municipal streets to collect materials which may generate dustrals which may generate dustrals which may generate dustrals collecting mulched trees. Over trucks collecting mulched trees to prevent release of dust and particulate. Design permanent HHW depot with features (e.g. air exchange and filter) to collect harmful air emissions to prevent effects and the release of gases to the atmosphere.
Component Environmental Effects	Odours may be released to atmosphere by compost units	Collection vehicles travelling along reads may result in release of dust and exhaust to the atmosphere or Grinding or mulching of Christmas trees as part of collection may result in release of dust to the atmosphere. Odours and harmful gases may be emitted from HHW collected due to the integrity of packaging or as a result of accidents (e.g. spills, leaks, vehicle upset). This may result in effects to the atmosphere.
Component Category/ Components	Residential Household Compositing - Door-to-door distribution of backyard composters to 80% of single family households. - Large 3-bin composting units distributed to apartment and cooperative housing complexes verification of the cooperative housing for multi-family households.	Other Residential Waste Diversion (HHW, Toxic Taxi, Pilot Wet-Dry, White Goods Collection, White Goods Drop-Off) Special curbside collections of Christnass trees Special and weekly curbside collections of white goods collections of white goods Drop-Off depots for white goods Special curbside collection for bulky items Permanent drop-off depot for household hazardous waste (HHW) Special bousehold hazardous waste drop-off a service Mobile HHW depots

TABLE B65 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

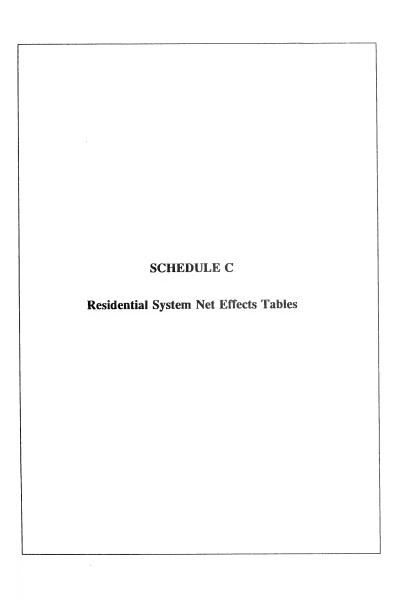
Component Net Effects	JC SSI	Pocential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from processing and compositing Effects may result due to nature of mixed waste feedstock.	
Mitigation/ Enhancement	Provide staff working with HHW with appropriate safety equipment and training. Develop contingency measures for spills and emergency response (including staff training and equipment) in the event of accidents to contain and restrict the release of harmful gas emissions to the amosphere.	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream. Proper design and operation of processing and compost facilities such as maniatining acrobic conditions and limited storage of purrescible feedstocks before processing and composting. Install emission controls to capture and treat process and building (if enclosed) are. Types of emission control include chemical scrubbers and boildillers. Minimize contact with and general exposure to open air during and screening of material and screening of material. Limit operations during adverse	weather conditions (i.e. windy weather)
Component Environmental Effects		Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volable organic compounds) are released from processing and compost facilities. However, concentations of these contaminants are generally very low or non-detectable with no effect on the amosphere. Potential for effects are greater at mixed waste facility due to nature of feedstock and handling of waste required.	
Component Category/ Components		Composting Facilities Centralized windrow composting of leaf and yard waste in-vessel composting of source separated organics New mixed waste processing and composting facility	

TABLE B6.5 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects		No effects identified	Emissions to atmosphere will be generated in the form of dust and bloacrosols within MRP. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for dust emissions to amosphere is reduced but not eliminated. No effects expected as a result of dust emissions.
Mitigation/ Enhancement	Provide equipment to individual staff to restrict or prevent exposure to dust, bioaerosols and VOC's (e.g. respirator) Daily cleaning of facility equipment and floors	None required	Provide ventilation system to capture building air for removal of dust and bioacrosols and replace with clean air, either at work stations or for entire MRF Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols(e.g. respirator) and bioacrosols(e.g. respirator) and floors	Maintain area around depois to climinate debris, litter and other materials which may generate dust
Component Environmental Effects		No effects identified	Processing of recyclables may generate dust and bioacrosol emissions within the facility resulting in effects	Air emissions in the form of dust may be generated when drop-off depots are unloaded
Component Category/ Components		Reuse Centres and Activities Municipal reuse centre Private reuse centre Non-profit reuse centre Charitable reuse centres Food reuse organization Special goods exchange days	Public MRFs • Processing centre for dry recyclables • Improvements to existing MRFs	Residential Recycling Depots and Transfer Stations • Drop-off depot for dry recyclables • Depots located at transfer stations

TABLE B65 GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Residential Promotion and Education			
Promotion/education program on source reduction/bre-cycling, reuse	 No effects identified 	None required	No effects identified
and recycling Recycling Recycling			
program • Consumer education program			





1. INTRODUCTION

The residential 3Rs system net effects tables are presented in the following order:

Durham Region	-	Tables C1.1 to C1.6
Metro Toronto Region	-	Tables C2.1 to C2.6
York Region	-	Tables C3.1 to C3.6
Peel Region	-	Tables C4.1 to C4.6







TABLE C1.1 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Existing

Advantages/Disadvantages by Criterion		Advantages • Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist	Disadvantages • Potential effects may result due to accidents
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of accident (e.g. spills, stacks, fries, whiche upset) at HHN depots but are restricted to a small area due to the location of the depots, design features and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimal and restricted to a small area, since HHW depois are located at a landfill site or transfer station, including design features at the depois and by implementing contingency measures in the event of an accident.	Accidents at HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE CI.2 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Existing/Committed

Advantages/Disadvantages by Criterion	-	Advantages • Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist	Disadvantages • Potential effects may result due to accidents
System Net Effects by Criterion	4	Potential for effects to terrestrial systems and resources is a result of accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depots. Effects are restricted to a small area near facility due to location of HHW depots, design features and contingency measures.	
System Net Effects by Indicator	strial Systems and Resources	Location of existing HHW depots at landfill site or transfer stations, design features at depots, and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C1.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No new facilities required which may result in additional potential effects	Disadvantages • Potential for effects due to discharges from existing facilities
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities. The installation of design features and contingency measures minimize the potential for effects	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at existing compost and HHW facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities
Criteria/Indicator	Criterion: Potential for Effects to Aqual	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C1.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes over wastes which have increased potential for effects have increased potential for effects Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles. Emissions including dust, odours, bioaerosols and gaseous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depots	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected composting but no effects expected agaseous emissions at compost or MRF facilities may result in effects Accidents at HHW depots may result in emissions to the amosphere and potential effects. Use of safety equipment and training reduces the	potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

TABLE CI.3 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	trial Systems and Resources		
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Location of existing HHW depots at landfill site or transfer stations, design features at depots, and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Potential for effocts to terrestrial systems and resources is a result of illegal dumping of wastes and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depots. Effocts are restricted to a small area near facility due to location of HHW depots, design features and contingency measures. Promotion/education of Direct Cost and 3Rs programs and enforcement minimizes the level of illegal dumping.	Advantages • Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist
Indicator: Potential for Disruption	• Potential for disruption effects due to		Disadvantages
Effects to Terrestrial Systems and Resources	illegal dumping of wastes may be minimized by promotion/education and enforcement of by-laws, but not eliminated		Potential effects may result due to accidents
	Accidents at HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot		Illegal dumping of wastes is anticipated resulting in disruption effects

TABLE C1.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		auic Advantages ss is due to os and No new facilities required which and illegal may result in additional potential ringency ential for on of mices.	Disadvantages Potential for effects due to discharges from existing facilities Illegal dumping of wastes is anticipated resulting in disruption effects
System Net Effects by Criterion	und Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities, and illegal dumping of wastes. The installation of design features and contingency measures minimize the potential for effects. Promotion/delucation of programs and dumping/littering by-law enforcement also minimizes effects	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at existing compost and HHW facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities Promotion/education of Direct Cost and 3Rs programs and illegal dumping or littering by-law enforcement minimizes disruption effects due to illegal dumping of wastes but does not eliminate the
Criteria/Indicator	ion: Potential for Effects to Aqua	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C1.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes or wet wastes which have increased potential for effects. s. ns are	ining Disadvantages The Emissions to armosphere include dust, exhaust, odours, bioaerosols and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions including dust, odours, bioacrosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions	may result in effects Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depots
System Net Effects by Indicator	ospheric Environment	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects. Accidents at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
· Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Aunospheric Emissions	

TABLE C1.4 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Expanded Blue Box

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential effects may result due to accidents	 Potential for loss or removal of terrestrial systems and resources due to facility sting
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new MFF and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW deptos. Effects are minimized by sting process or restricted to a small area near facility due to location of HHW depos, design features and contingency measures		
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate string process for new MRF Location of existing HHW depots at landfill site or transfer stations, design features at depots, and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area.	Accidents at HHW depots may potentially disrupt errestrial systems and resources in a small localized area near the depot	
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	-

TABLE C1.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential for effects due to discharges from existing facilities • New MRF required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from HHW depots and central compost facilities, and location of new MRF. The installation of design features and contingency measures, and proper siting of MRF minimize the potential for effects	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new MRF, and installing facility design features at existing compost and HHW facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities
Criteria/Indicator	Criterion: Potential for Effects to Aqual	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C1.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes or wet wastes which have increased potential for effects	Disadvantages • Emissions to amosphere include dust, exhaust, odours, bioaerosols and gases
System Net Effects by Criterion		Potential for effects to the amorospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions including dust, odours, bioaetrosols and gaseous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects	Use of safety equipment and training reduces potential for effects as a result of emissions to amosphere during accidents at HHW depots
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to amnosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects Accidents at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

TABLE CI.5 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources		
Indicator: Potential for Loss or Removal of Terrestrial Systems and	Potential for loss or removal of terrestrial systems and resources is	Potential for effects to terrestrial systems and resources is a result of	Advantages
Resources	minimized by following appropriate	siting new MRF and compost	• None
	siting process for new MRF and compost facilities	facilities, and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depots. Effects are minimized	
	 Location of existing HHW depots at landfill site or transfer stations. 	by facility siting process or restricted to a small area near facility due to	
	design features at depots, and	location of HHW depots, design	
	implementing contingency measures restricts notential for loss or removal.	features and contingency measures	
	in the event of an accident, to a small area	-):	
Indicator: Potential for Disruption	Accidents at HHW depots may		Disadvantages
Effects to Teffestrial Systems and Resources	potentiany disrupt terrestrata systems and resources in a small localized area near the depot		 Potential effects may result due to accidents
			 Potential for loss or removal of terrestrial systems and resources due to sting of facilities

TABLE C1.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages Potential for effects due to discharges from existing facilities New MRF and compost facilities required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities, and location of new MRF and compost facilities. The installation of design features and contingency measures and proper siting of MRF and compost facilities minimize the potential for effects.	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Pocential for disruption to aquatic systems and water resources is minimized by proper siting of new MRF and compost facilities, and installing facility design features at new and existing compost and HHW facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C1.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes		Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases	Emissions from wet waste composting may result in additional effects
System Net Effects by Criterion		δ	Emissions including dust, odours, bioacrosols and gaseous emissions are expected at compost facilities (particularly wet waste compost facility) and MRF. Exposure to these emissions may result in effects.	Use of safety equipment and training Directores potential for effects as a result of emissions to amosphere during accidents at HHW depots.	•
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities (particularly wet waste compost facility) may result in effects	 Accidents at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C1.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Durham Residential Mixed Solid Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Effects to Terresi	Criterion: Potential for Effects to Terrestrial Systems and Resources		
Indicator: Potential for Loss or	Potential for loss or removal of terrestrial externs and resources is	 Potential for effects to terrestrial systems and resources is a result of 	Advantages
	minimized by following appropriate siting process for new mixed waste	siting new mixed waste processing and compost facility, and due to	• None
	processing and compost facility	accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depots.	
	Location of existing HHW depots at londfill gits or transfer stations	Effects are minimized by facility citing process or restricted to a small	
-	design features at depots, and	area near facility due to location of	
	implementing contingency measures	HHW depots, design features and	
	restricts potential for loss or removal, in the event of an accident, to a	contingency measures	
	small area		
Indicator: Potential for Disruption	 Accidents at HHW depots may 		Disadvantages
Effects to Terrestrial Systems and Resources	potentially disrupt terrestrial systems and resources in a small localized area near the depot		 Potential effects may result due to accidents
			Potential for loss or removal of terrestrial systems and resources due to facility sting

TABLE CL6 SYSTEM NET EFFECTS TABLE (continued)

8			ities and ch may
Advantages/Disadvantages by Criterion			Disadvantages • Potential for effects due to discharges from existing facilities • New mixed waste processing and compost facility required which may result in additional effects
dvantages/Disadva by Criterion		<u>श</u>	Disadvantages Potential for effects due to discharges from existing fa discharges from existing fa Now mixed waste processi compost facility required w result in additional effects
Y Y		Advantages None	Disadvantages • Potential for discharges I work mixed compost far result in additional and a compost far result in a discharges.
System Net Effects by Criterion	nd Water Resources	Potential for effects to aquatic systems and water resources is due to hocation of new mixed waste processing/compost facility and discharges from HHW depols, central compost facilities and mixed waste processing/compost facility. The	installation to cessign returnes and contingency measures, and proper sing of new facility minimize the potential for effects
System Net Effects by Indicator	ic Systems Including Surface and Groun	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW, mixed waste processing and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new mixed waste processing-compost facility, and installing facility design features at existing compost and HHW facilities and me mixed waste processing/compost facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities.
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C1.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages	• None					Disadvantages	Emissions to atmosphere include	and gases		Emissions from mixed waste mycessing and composting may	result in additional effects	
System Net Effects by Criterion	-	 Potential for effects to the atmospheric environment are 	expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours,	expected at mixed waste	processing/compost and compost facilities and MRF. Exposure to	these emissions may result in effects	 Use of safety equipment and training reduces potential for effects as a 	result of emissions to atmosphere	during accidents at ninw depots				
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to	collection vehicles travelling along roads and from unloading depots or bins	3	Some edours expected from residential composting, central	composting and mixed waste	effects expected	Exposure to dust, bioaerosols and gaseous emissions at mixed waste	processing/compost, compost or	MICE TACHINGS HIRD TESMIT III GUCUS	Accidents at HHW depots may result	in emissions to the atmosphere and protential effects. Use of eafety	equipment and training reduces the	potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions												



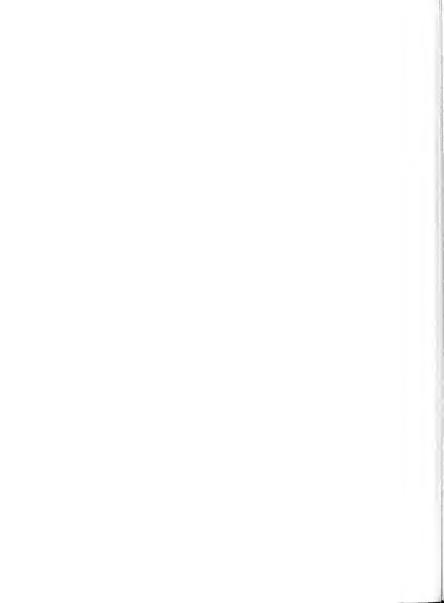


TABLE C2.1 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Metro Toronto , Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources	-	
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimal and restricted to a small area, since permanent HHW depots are located at existing landfill sites and transfer stations, including design features at the depots and by implementing contingency measures in the event of an accident (including toxic taxis)	Potential for effects to terrestrial systems and resources is a result of accidents (e.g. spills, Heast, fires, whiche upset) involving toxic taxi or at HHW depots but are restricted to a small area due to the location of the depots, design features and contingency measures	Advantages Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist
Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	Accidents at HHW depots or involving toxic taxi may potentially disrupt terrestrial systems and resources in a small localized area near the depot or vehicle		Disadvantages • Potential effects may result due to accidents

TABLE C2.1 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advanages No new facilities required which may result in additional potential effects Disadvantages Potential for effects due to discharges from existing facilities
System Net Effects by Criterion	Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities. The installation of Gesign features to prevent discharges and contingency measures (also for toxic taxi) minimize the potential for effects
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at HHW depots and compost facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities and toxic taxi
Criteria/Indicator	Criterion: Potential for Effects to Aqual	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C2.1 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes or wet wastes which have increased potential for effects		Disadvantages • Emissions to the atmosphere include dust, exhaust, odours, bioaerosols and pases	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, blodercosts and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects	 Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents involving toxic taxi or at HHW denots 	
System Net Effects by Indicator	pheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gascous emissions at compost or MRF facilities may result in effects Accidents involving toxic taxi or at	HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C2.2 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Metro Toronto Residential Existing/Committed

Advantages/Disadvantages by Criterion		Advantages. None	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to sting one to two MRFs and new compost facility	
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new central compost facility and one to two new MRFs and due to accidents (e.g. spills, leaks, fires, which upset) involving toxic taxt or at HHW depots. Effects are minimized by siting process or restricted to a small area due to location of HHW depots, design features and contingency measures		
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new central compost facility and one to two new MRFs Location of existing HHW depots, design features at depots, and implementing contingency measures (also for toxic taxis) restricts potential for loss or removal, in the event of an accident, to a small area	Accidents involving toxic taxi or at HHW depots may potentially disrupt terrestral systems and resolutes in a small localized area near the depot or vehicle	
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	

TABLE C2.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New central compost facility is invessel facility reducing potential for effects	Disadvantages • Potential for effects due to discharges from existing facilities • New central compost facility and one to two new MRFs required which may result in additional effects
System Net Effects by Criterion	1 Water Resources	• Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities and location of new central compost facility and one to two new MRFs. The installation of design features and contingency measures (also for toxic taxt), and proper sting of new facilities minimize the potential for effects. New compost facility is invessel facility with no effects expected as a result	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters. No effects expected from new in-vessel compost facility	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new central compost facility and one to two new MRFs, and installing facility design features as new and existing compost facilities and HHW depots to prevent discharges to estimate and ground waters. No effects expected from new compost facility since it is an in-vessel facility. Contingency measures further minimize potential effects from HHW facilities and toxic taxi
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C2.2 SYSTEM NET EFFECTS TABLE (continued)

Criteria/Indicator			
	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Atmospheric Environment	spheric Environment		
Indicator: Potential for Atmospheric Emissions	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected	Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions including dust, odours, bioaerosols and gaseous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. Composting of residential organics at new in-vessel facility not expected to result in additional effects	Advantages Composting of wet wastes is done at in-vessel facility
	Exposure to dust, bioacrosols and gascous emissions at compost or MRF facilities may result in effects. Composting of residential organics at new in-vessel facility not expected to result in increase in emissions Accidents involving toxic taxi or at HHW depols may result in emissions to the atmosphere and potential effects. Use of safety equipment and ratining reduces the potential for effects.	Use of safety equipment and training reduces potential for effects as a result of emissions to amosphere during accidents involving toxic taxi or at HHW depots	Disadvantages - Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases

TABLE C2.3 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

TY: Metro Toronto
Residential Direct Cost

	1	1							
Advantages/Disadvantages by Criterion		Advantages None			Disadvantages	Potential effects may result due to accidents	 Potential for loss or removal of terrestrial system and resources due 	to siting of one to two MRFs and new central compost facility	 Illegal dumping of wastes is anticipated resulting in disruption effects
System Net Effects by Criterion		 Potential for effects to terrestrial systems and resources is a result of sting new central compost facility and one to two new MRFs, illegal 	dumping of wastes and due to accidents (e.g. spills, leaks, fires, vehicle upset) involving toxic taxi or at HHW depots. Effects are minimized by simp moress or	restricted to a small area due to location of HHW depots, design features and contingency measures. Promotion/education of Direct Cost	and 3Rs programs and enforcement minimizes the level of illegal	Sundiano			
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new central	compost facility and one to two new MRFs Location of existing HHW depots, design features at denots, and	implementing contingency measures (also for toxic taxt) restricts potential for loss or removal, in the event of an accident, to a small area	Potential for disruption effects due to illegal dumping of wastes may be	minimized by promotion/education and enforcement of by-laws, but not eliminated	Accidents involving toxic taxi or at	HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot	or vehicle
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources			Indicator: Potential for Disruption Effects to Terrestrial Systems and	Resources			

TABLE C2.3 SYSTEM NET EFFECTS TABLE (continued)

System Net Effects Advantages/Disadvantages by Criterion by Criterion		Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and compost facilities, location of new central compost facility and one central compost facility and one contral compost facility and one central compost facility and one of design features and contingency of design features and contingency and the contral control of the control of	Disadvantages minimize the potential for effects. New compost facilities minimize the potential for effects. New compost facilities in vessel facility with no effects expected as a facilitie with no effects expected as a programs and dumping/littering by- law enforcement also minimizes effects Illegal dumping of wastes is anticipated resulting in disruption effects.	
System Net Effects System P by Indicator by Ci	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is is minimized by installing design features at HHW and compost facilities to prevent discharges from HHW depots sufface and ground waters. No surface and ground waters. No cure new MRFs, and iliggal effects expected from new in-vessel compost facility of the property of the prop	Potential for disruption to aquatic systems and water resources is minimized by proper stitug of new central compost facility and one to two new MRFs, and installing facility design features at new and existing compost facilities and HHW depols to prevent discharges to surface and ground waters. No surface and ground waters. No surface and ground waters. No facility since it is in an in-vessel facility. Contingency measures further minimize potential effects from HHW facilities and toxic taxi	Promotion/education of Direct Cost and 3Rs programs and illegal dumping or littering by-law enforcement minimizes disruption effects due to illegal dumping of usestees but does no alimitate the
Criteria/Indicator	Criterion: Potential for Effects to Aquatic	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	•

TABLE C2.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages Composting of wet wastes is done at in-vessel facility		Disadvantages	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, biobearosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. Composing of residential organics at new in-vessel facility not expected to result in additional effects.	Use of safety equipment and training reduces potential for effects as a result of emissions to amosphere during accidents involving toxic taxi or at HHW depots	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioacrosols and gascous emissions at compost or NRF facilities may result in effects. Composting of residential organics at new in-vessel facility not expected to result in increase in emissions	Accidents involving toxic taxi at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

SYSTEM NET EFFECTS TABLE TABLE C2.4

REGIONAL MUNICIPALITY: SYSTEM:

Metro Toronto Residential Expanded Blue Box

			9
Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terretrial systems and resources due to sting of one to two MRFs and new compost facility
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new central compost facility and one to two new MRFs and due to accidents (e.g. spills, leaks, fires, vehicle upset) involving toxic taxi or at HHW depots. Effects are minimized by stiting process or restricted to a small area due to location of HHW depots, design features and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for one to two new MRFs and new central compost facility Location of existing HHW depots, design features at depots, and implementing contingency measures (also for toxic taxi) restricts potential for loss or removal, in the event of an accident, to a small area	Accidents involving toxic taxi or at HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot or vehicle
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C2.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New central compost facility is invessel facility reducing potential for effects	Disadvantages Potential for effects due to discharges from existing facilities New central compost facility and one to two new MRE's required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from HHW depots and central compost facilities, and location of new central compost facility and one to two new MRFs. The installation of design features and contingency measures (also for toxic taxt), and proper sting of new facilities minimize the potential for effects. New compost facility is invessel facility with no effects expected as a result.	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters. No effects expected from new in-vessel compost facility	Potential for disruption to aquatic yestems and water resources is minimized by proper stiring of new central compost facility and one to two new MRPs, and installing facility design features as new and existing compost facilities and HHW depots to prevent discharges to surface and ground wasters. No effects expected from new compost facility since it is an in-vessel facility. Contingency measures further minimize potential effects from HHW achility and total three minimize potential effects from HHW achilities and toxic taxi
Criteria/Indicator	Criterion: Potential for Effects to Aquai	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C2.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages • Composting of wet wastes is done at in-vessel facility	Disadvantages • Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions including dust, odours, bloacrosols and gaseous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. Composting of residential organics at new in-vessel facility not expected to result in additional effects.	Use of safety equipment and training reduces potential for effects as a result of emissions to amosphere during accidents involving toxic taxi or at HHW depots
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gascous emissions at compost or MRF facilities may result in effects. Composting of residential organics at new in-vessel facility not expected to result in increase in emissions Accidents involving toxic taxi or at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

TABLE C2.5 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

JTY: Metro Toronto Residential Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources	×	
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and recources is minimized by following appropriate siting process for one to two new MRFs and new compost facility Location of existing HHW depots, design features at depots, and implementing contingency measures (also for toxic taxi) reservicts potential for loss or removal, in the event of an accident, to a small area	Potential for effects to terrestrial systems and resources is a result of siting one to two new MFrs and new central compost facility, and due to accidents (e.g. spills, leaks, fires, wehicle upsol; involving toxic taxi or at HHW depots. Effects are minimized by facility sling process or restricted to a small area due to location of HHW depots, design features and contingency measures	- None
Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	Accidents involving toxic taxi or at HHW depots may potentially disrupt terrestrial systems and resources in a small localized area near the depot or vehicle		Disadvantages Potential effects may result due to accidents Potential for loss or removal of terrestrial systems and resources due to sting of one to two MRFs and new central compost facility

TABLE C2.5 SYSTEM NET EFFECTS TABLE (continued)

_	-		
Advantages/Disadvantages by Criterion		Advantages New central compost facility is invessel facility reducing potential for effects	Disadvantages • Potential for effects due to discharges from existing facilities • New compost facility and one to two new MRFs required which may result in additional effects
System Net Effects by Criterion	1 Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depots and central compost facilities, and location of one to two new MRFs and new central compost facility. The installation of design features and contingency measures (also for toxic taxi) and proper stiting of MRFs and compost facility minimize the patential for effects. New compost facility is in-vessel facility with no effects expected as a result	•
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters. No effects expected from new in-vessel compost facility	Potential for disruption to aquatic systems and water resources is minimized by proper siting of one to two new MRFs and new central compost facility, and installing facility design features as new and existing compost and HHW depots to prevent discharges to surface and ground waters. No effects expected from new compost facility since it is an in-vessel facility. Contingency measures further minimize potential effects from HHW facilities and toxic taxi
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C2.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Movantages No processing and composting of mixed wastes Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases Emissions from increased wet waste composting may result in additional effects
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles emissions including dust, odours, bioaerosols and gascous emissions are expected at compost facilities and MRFs. Exposure to these emissions may result in effects. Additional emissions (VOCs) may result due to increased residential wet waste composting at in-vessel facility Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents involving toxic taxi or at HHW depots
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some odours expected from residential composting and central composting but no effects expected gaseous emissions at compost or MRF facilities may result in effect. Increased quantity of residential wet wastes composted at in-vessel facilities may result in additional emissions (VOCs) Accidents involving toxic taxi or at HHW depots may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions

TABLE C2.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Metro Toronto Residential Mixed Solid Waste Processing

Advantages/Disadvantages by Criterion		Advantages • Potential for effects reduced since only a single new facility is required records and the single new facility is required to the single new facility is require	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to siting of mixed waste processing and compost facility
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting now mixed waste processing and compost facility, and due to accidents (e.g., spills, leaks, fires, vehicle upset) involving toxic taxi of at HHW depots. Effects are minimized by facilities sting process or restricted to a small area due to location of HHW depots, design features and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for new mixed waste processing and compost facility Location of existing HHW depots, design features at depots, and implementing contingency measures (also for toxic taxis) restricts potential for loss or removal, in the event of an accident, to a small area	Accidents involving toxic taxis or at HHW depots may potentially disrupt terrestral systems and resources in a small localized area near the depot or vehicle
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C2.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages • Potential for effects reduced since only a single new facility is required	Disadvaniages • Potential for effects due to discharges from existing facilities • New mixed waste processing and compost facility required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to location of new mixed waste processing/compost facility and discharges from HHW depots and mixed waste processing/compost facility. The installation of design features and contingency measures	(also for toxic taxi), and proper stiting of new facility minimize the potential for effects
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW, compost and mixed waste processing and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper sting of new mixed waste processing/compost facility, and installing facility design features at existing compost and HHW facilities and new mixed waste processing/compost facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facilities and toxic taxi
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C2.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages	• None							Disadvantages		Emissions to atmosphere include	and gases	0	 Emissions from mixed waste 	processing and composting may	result in additional effects					
System Net Effects by Criterion		 Potential for effects to the atmospheric environment are 	expected due to dust and exhaust emissions from collection vehicles	 Emissions including dust, odours, bioacrosols and gaseous emissions are 	expected at mixed waste	processing/compost and compost facilities and MRF. Exposure to	these emissions may result in effects.	wastes may result in most barmful	emissions	· Use of safety equipment and training	reduces potential for effects as a	result of emissions to atmosphere	or at HHW denot									
System Net Effects by Indicator	spheric Environment	 Dust and exhaust emissions to atmosphere expected due to 	collection vehicles travelling along roads and from unloading depots or	bins	 Some odours expected from 	residential composting, central composting and mixed waste	processing/compost facility but no	cuers experied		 Exposure to dust, bioaerosols and 	gaseous emissions at mixed waste	processing/compost, compost or	Processing and composting of mixed	wastes may result in additional	emissions (particularly VOCs)		 Accidents involving toxic taxi or at 	HHW depots may result in emissions	to the atmosphere and potential	effects. Use of safety equipment and	training reduces the potential for	effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	**																			





TABLE C3.1 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources		
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minima and restricted to a small area. HHW is collected by small mobile depot or special collection day. Effects are minimized by holding HHW collections at appropriate locations and appropriate locations and contingency measures can be implemented in the event of an accident	Potential for effects to terrestrial systems and resources is a result of accidents (e.g. pullis, Lasks, frees, vehicle upset) at HHW collection day or mobile depot but are restricted to a small area due to the location of collection sites and contingency measures	Advantages Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist
Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection depot		Disadvantages • Potential effects may result due to accidents

TABLE C3.1 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advanages No new facilities required which may result in additional potential effects	Disadvantages • Potential for effects due to discharges from existing facilities
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from HHW collection days and mobile depot and central compost facility. The installation of design features to prevent dischages, holding HHW collections at appropriate locations and appropriate locations and	effects
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at compost facility and by holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at compost facilities to prevent dischages to surface and ground waters. Holding HHW collections at appropriate locations and contingency measures further minimize potential effects from dischages at HHW collection areas
Criteria/Indicator	Criterion: Potential for Effects to Aqua	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C3.1 SYSTEM NET EFFECTS TABLE (continued)

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Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes ow tweates which have increased potential for effects.		Disadvantages • Emissions to the atmosphere include dust, exhaust, odours, bioaerosols	and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, bioaerosols and gaseous emissions are expected at compost facility and MRFs. Exposure to these emissions may result in effects	 Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW collection 	events
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioacrosols and gaseous emissions at compost or MRF facilities may result in effects	Accidents at this concetton events may result in emissions to the amosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C3.2 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Existing/Committed

Advantages/Disadvantages by Criterion		Advantages New MRE and in-vessel central compost facility have been approved and are being developed, with no effects expected	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to stiting two new compost facilities
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting two new central compost facilities and due to accidents (e.g. spills, leats, fires, wehice tuped) at HHW collection day or mobile depot. Effects are minimized by siting process or restricted to a small area due to location of HHW collections and contingency measures. New MRF and central compost facility already being developed	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for two new central compost facilities. New MRF and a central compost facility already approved and being developed Holding HHW collection days or locating mobile depot at appropriate site and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection area
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C3.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel compost facility are being developed with no effects expected	Disadvantages • Potential for effects due to discharges from existing facilities • New central compost facilities may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to dischanges from HHW collection days or mobile depot and central compost facilities, and location of new central compost facilities. The installation of design features and contingency measures, and proper siting of new facilities and HHW collections minimize the potential for effects. No effects expected from new MRF and in-vessel compost facility presently being developed	N)
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at compost facilities, holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters. No effects from new in- vessel compost facility expected	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new central compost facilities and installing facility design features at new and existing compost facilities to prevent discharges to surface and ground waters. New MRF and invessel compost facility not expected to result in effects. Appropriate locations for HHW collections and contingency measures minimize potential effects from HHW collection areas
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C3.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages Composting of wet wastes is done at in-vessel facility		Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions includine dust. odours.	bioacrosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. New in-vessel compost facility for residential organics not expected to result in additional effects	Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW collection sites	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioacrosols and gaseous emissions at compost or MRF facilities may result in effects. Residential organics to be composted at new in-vessel facility with no anticipated increase in emissions	Accidents at HHW collection days or mobile depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C3.3 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Direct Cost

Advantages/Disadvantages by Criterion		Advantages New MRF and in-vessel central compost facility have been approved and are being developed, with no effects expected	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial system and resources due to sting of two new compost facilities • Illegal dumping of wastes is anticipated resulting in disruption effects
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting two new central compost facilities, illegal dumping of wastes and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW collection day or mobile depout Effects are minimized by siting process or restricted to a small area due to location of HHW collections and contingency measures. Promotion/education of Direct Cost and 38s programs and enforcement minimizes the locations and contingents who leaved to the contingent of the collections.	dumping. New MRF and central compost facility already being developed
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for two new central compost facilities. New MRF and compost facilities. New MRF and approved and being developed Locating HHW collection days or mobile deport at appropriate site and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a remail area.	Potential for disruption effects due to illegal dumping of wastes may be minimized by promotion/education and enforcement of by-laws, but not eliminated Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection area
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C3.3 SYSTEM NET EFFECTS TABLE (continued)

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Advantages/Disadvantages by Criterion	Advantages New MPE and new in wessel	•	Disadvantages	Potential for effects due to discharges from existing facilities	New central compost facilities may result in additional effects	 Illegal dumping of wastes is anticipated resulting in disruption effects 			
System Net Effects by Criterion	d Water Resources • Potential for effects to aquatic systems and water resources is the to disobasons from URW collection dots	ansurages from rat worecome asys or mobile depot and central compost facilities, location of new central compost facilities and ailegal dumping of wastes. The installation of design features and contingency measures, and proper stings of new facilities and	HHW collections minimize the potential for effects. No effects	vessel compost facility presently being developed. Promotion/	education of programs and dumping/litering by-law enforcement also minimizes effects				
System Net Effects by Indicator	ic Systems Including Surface and Groun • Potential for loss or removal of aquatic systems and water resources	is minimized by instanting design features at compost facilities, holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is	minimized by proper siting of new central compost facilities and installing facility design features of	instanting facility testign features at new and existing compost facilities to prevent discharges to surface and ground waters. New MRF and in-	vessel compost facility not expected to result in effects. Proper locations for HHW collections and	contingency measures minimize potential effects from HHW collection areas	Promotion/education of Direct Cost and 3Rs programs and illegal dumping or littering by-law	enforcement minimizes disruption effects due to illegal dumping of wastes but does not eliminate the
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Indicator: Potential for Loss or Potential for effects of Aquatic Systems and water resources systems and water resources from the control of Aquatic Systems and water resources.	Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including	Surface and Ground Water Resources					

TABLE C3.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages Composting of wet wastes is done at in-vessel facility		Disadvantages • Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, bloacerosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. New in-vessel compost facility for residential organics not expected to result in additional effects.	Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW collection sites	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects. Residential organics to be composted at new in-vessel facility with no anticipated increase in emissions	 Accidents at HHW collection days or mobile depot may result in emissions to the amosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	-		

TABLE C3.4 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Expanded Blue Box

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Advantages/Disadvantages by Criterion		Advanages New MRF and in-vessel central compost facility have been approved and are being developed with no effects expected	Disadvantages Potential effects may result due to accidents Potential for loss or removal of terrestrial systems and resources due to sting of two new compost facilities
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting two new central compost facilities and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW collection day or mobile depot. Effects are minimized by stiting process or restricted to a small area due to location of HHW collections and contingency measures. New MRF and central compost facility already being developed. Expansion of new MRF not expected to result in effects	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for two new central compost facilities. New MRF and central compost facilities. New MRF and perroved and being developed. Expansion of new MRF capacity not expected to result in effects Locating HHW collection days or mobile depot at appropriate sites and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection area
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C3.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel compost facility are being developed, with no effects expected	Disadvantages Potential for effects due to discharges from existing facilities New central compost facilities may result in additional effects
System Net Effects by Criterion	Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW collection days or mobile depot and central compost facilities, and location of new central compost facilities. The installation of design features and contingency measures, and proper siting of new facilities and HHW collections minimize the potential for effects. No effects expected from new MRF (and new MRF expansion) and invessel compost facility presently being developed.	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at compost facilities, holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters. No effects from new invessel compost facility expected	Potential for disruption to aquatic systems and water resources is minimized by proper sting of new central compost facilities and installing facility design features at new and existing compost facilities to prevent discharges to surface and ground waters. New MRF (and its expansion) and in-vessel compost facility not expected to result in effects. Proper locations for HHW collections and contingency measures minimize potential effects from HHW collection areas
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C3.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages Composting of wet wastes is done at in-vessel facility		Disadvantages	
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, blobenerosls and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects. New in-vessel compost actility for residential organics not expected to result in additional effects.	Use of safety equipment and training reduces potential for effects as a result of emissions to amosphere during accidents at HHW collection sites	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF featilises may result in effects. Residential organics to be composed at new in-vessel facility with no anticipated increase in emissions	Accidents at HHW collection days or mobile depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C3.5 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Wet/Dry

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel central compost facility have been approved and are being developed, with no effects expected. Expansion of MRF may be appropriate for this system, with no effects expected	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to sting of two new compost facilities and possibly new MRF
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new MRR, if required, and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW collection day or mobile depot. Effects are minimized by facility sting process or restricted to a small area due to location of HHW collections and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new MRF if existing MRF is not expanded. A new MRF and new in-vessel compost facility are already approved and being developed. Holding HHW collection days or locating mobile depois at appropriate site and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection area
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C3.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel compost facility are being developed, with no effects expected	Disadvantages • Potential for effects due to discharges from existing facilities • New MRF (if required) and compost facilities required which may result in additional effects
System Net Effects by Criterion	1 Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW collection days or mobile depot and central compost facilities, and location of new MRF, if required. The installation of design features and contingency measures and proper sting of MRF and HHW collections minimize the potential for effects. No effects expected from invessel compost facility	
System Net Effects by Indicator	ic Systems Including Surface and Ground	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at compost facilities, holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters. No effects from in-vessel compost facility expected	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new MRF, if required, and installing facility design features at existing compost facilities to prevent discharges to surface and ground waters. In-vessel compost facility not expected to result in effects. Proper locations for HHW collections and contingency measures minimize potential effects from HHW collection areas
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C3.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes	Disadvantages Emissions to atmosphere include dust, exhaust, odours, bicaerosols and gases	Emissions from increased wet waste composting may result in additional effects
System Net Effects by Criterion		s are	emisions (VOCs) may result due to increased residential wet waste composting at in-vessel facility Use of safety equipment and training Discreases potential for effects as a result of emissions to atmosphere during accidents at HHW collection sites	
System Net Effects by Indicator	pheric Environment	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unloading depois or bins Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRP facilities may result in effects. Increased quantity of residential wet wastes composted at in-vessel facility may result in additional.	emissions (VOCs) • Accidents at HHW collection days or mobile depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions		

TABLE C3.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

York Residential Mixed Solid Waste Processing

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel central compost facility have been approved and are being developed, with no effects expected	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestral systems and resources due to sting of two new central compost facilities and mixed water
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of sing two new central compost facilities and new mixed waste processing and compost facility, and due to accidents (e.g., spills, leaks, fres, vehicle upset) at HHW collection day or mobile depor. Effects are minimized by facilities siting process or restricted to a small area due to location of HHW collections and contingency measures. New MRR and in-vessel compost facility already approved and being developed	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for two new central compost facilities and new mixed waste processing and compost facility. New MRF and in-vessel compost facility already approved and being developed Holding HHW collection days or locating mobile depot at appropriate site and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW collection day or mobile depot may potentially disrupt terrestrial systems and resources in a small localized area near the collection area
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

processing/compost facility

TABLE C3.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages New MRF and new in-vessel central compost facility are being developed, with no effects expected Disadvantages Potential for effects due to discharges from existing facilities New central compost facilities, and mixed waste processing and compost facility required which may result in additional effects	
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to location of two new central compost facilities, and new mixed waste processing/compost facility and discharges from HHW collection days or mobile deptor, central compost facilities and mixed waste processing/compost facilities and mixed waste processing/compost facilities and contingency messures, and proper siting of new facilities and HHW collections minimize the potential for effects. No effects expected from new MRF and in-vexel compost facility presently being developed	
System Net Effects by Indicator	ic Systems Including Surface and Groun	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at compost and mixed wast processing and compost facilities, holding HHW collections at appropriate locations and having contingency measures in place to prevent discharges to surface and ground waters. No effects from new in-vessel compost facility expected - Potential for disruption to aquatic systems and water resources is minimized by proper sliting of two new central compost facilities, and new mixed waste processing/compost facility, and installing facility design features at existing and new compost facility, and installing facility design processing/compost facility to or prevent discharges to surface and ground waters. New MRF and invessel compost facility not expected to result in effects. Proper locations for HHW collections and contingency measures minimize potentials effects.	collection areas
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	

TABLE C3.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages		 Some wet wastes are composted at 	in-vessel facility					Disadvantages		 Emissions to atmosphere include 	dust, exhaust, odours, bioaerosols	and gases		 Emissions from mixed waste 	processing and composting may	result in additional effects								•	
System Net Effects by Criterion		 Potential for effects to the 	atmospheric environment are	expected due to dust and exhaust	emissions from collection vehicles	 Emissions including dust, odours, 	bioaerosols and gaseous emissions are	expected at mixed waste processing/	compost facility, central compost	facilities and MRF. Exposure to	these emissions may result in effects.	Processing and composting of mixed	wastes may result in most harmful	emissions		 Use of safety equipment and training 	reduces potential for effects as a	result of emissions to atmosphere	during accidents at HHW collection	sites							
System Net Effects by Indicator	pheric Environment	Dust and exhaust emissions to	atmosphere expected due to	collection vehicles travelling along	roads and from unloading depots or bins		 Some odours expected from 	residential composting, central	composting and mixed waste	processing/compost facility but no	effects expected		 Exposure to dust, bioaerosols and 	gaseous emissions at mixed waste	processing/compost, compost or	MRF facilities may result in effects.	Residential organics to be composted	at new in-vessel facility with no	anticipated increase in emissions.	Processing and composting of mixed	wastes may result in additional	emissions (particularly VOCs)	Accidents at HHW depot may result	in emissions to the atmosphere and	potential effects. Use of safety	equipment and training reduces the	potential for effects.
Criteria/Indicator	Criterion: Potential for Estects to Atmospheric Environment	Indicator: Potential for Atmospheric	Emissions																								





TABLE C4.1 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Existing

Advantages/Disadvantages by Criterion		Advantages • Potential for loss or removal of terrestrial systems and resources is minimal since facilities already exist	<u>Disadvantages</u> • Potential effects may result due to accidents
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of accidents (e.g. spills, leaks, fires, vehicle upsel at HHW depot but are restricted to a small area due to the location of the depot, design features and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimal and restricted to a small area, since HHW depot is locaed at existing landfill site, including design features at the depot and by implementing contingency measures in the event of an accident	Accidents at HHW depot may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C4.1 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No new facilities required which may result in additional potential effects	Disadvantages • Potential for effects due to discharges from existing facilities
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depot and central compost facilities. The installation of design features to prevent discharges and contingency prevent discharges and contingency	measures minimize the potential tot
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at HHW depot and compost facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C4.1 SYSTEM NET EFFECTS TABLE (continued)

8			ing of which	effects			e include			
Advantages/Disadvantages by Criterion		Advantages	No processing and composting of mixed wastes or wet wastes which	have increased potential for effects		Disadvantages	Emissions to the atmosphere include dust, exhaust, odours, bioaerosols	and gases		
System Net Effects by Criterion	2	Potential for effects to the atmospheric environment are	expected due to dust and exhaust emissions from collection vehicles		Emissions including dust, odours, bioaerosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects	Use of safety equipment and training reduces notential for effects as a	result of emissions to atmosphere during accidents at HHW depot			
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to	collection vehicles travelling along roads and from unloading depots or	bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or	MRF facilities may result in effects	 Accidents at HHW depot may result in emissions to the atmosphere and 	potential effects. Use of safety	equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions								

TABLE C4.2 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Existing/Committed

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to sting facilities	
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new central compost facility and new MRF and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depot. Effects are minimized by siting process or restricted to a small area near facility due to location of HHW depot, design features and contingency measures		1
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for new central compost facility and new MRF Location of existing HHW depot at landfill site, design features at depot, and implementing contingency measure restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW depot may potentially disrupt terrestrial systems and resources in a small localized area near the depot	
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	

TABLE C4.2 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages . None	Disadvantages • Potential for effects due to discharges from existing facilities • New central compost facility and MRF required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from HHW depot and central compost facilities, and location of new central compost facility and new MRF. The installation of design features and contingency measures, and proper siting of new facilities minimize the potential for effects	
System Net Effects by Indicator	ic Systems Including Surface and Groun	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	 Potential for disruption to aquatic systems and water resources is minimized by proper siting of new central compost facility and new MRF, and installing facility design features at new and existing compost facilities and HHW facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C4.2 SYSTEM NET EFFECTS TABLE (continued)

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Atmospheric Environment	pheric Environment		
Indicator: Potential for Atmospheric Emissions	Dust and exhaust emissions to atmosphere expected due to collection validate recogling about	Potential for effects to the atmospheric environment are accounted and district and accounted and and and and accounted and accounted and accounted and accounted as a second accounted as a seco	Advantages
	roads and from unloading depots or bins	emissions from collection vehicles	mixed wastes or wet wastes which have increased potential for effects
	Some odours expected from residential composting and central composting but no effects expected	Emissions including dust, odours, potoerrosons are expected at compost facilities and MRF. Exposure to these emissions may result in effects	
	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects	 Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depot 	Disadvantages • Emissions to atmosphere include dust, exhaust, odours, bioaerosols
	 Accidents at HHW depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects. 		and gases

TABLE C4.3 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Direct Cost

Advantages/Disadvantages by Criterion	,	Advantages	· None			Disadvantages	 Potential effects may result due to accidents 	 Potential for loss or removal of 	terrestrial system and resources due to siting of facilities	Illegal dumping of wastes is anticipated resulting in disruption effects
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of	siting new central compost facility and new MRF, illegal dumping of wastes and due to accidents (e.g. spills, leaks, fires, vehicle urses) at	HHW depot. Effects are minimized by siting process or restricted to a small area near facility due to location of HHW depot, design	Promotion/education of Direct Cost	and 3Rs programs and enforcement minimizes the level of illegal	gurdump			
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is	minimized by following appropriate sting process for new central compost facility and new MRF	Location of existing HHW depot at landfill site, design features at depot, and implementing contingency measures restricts potential for loss	accident, to a small area	Potential for disruption effects due to illegal dumping of wastes may be	minimized by promotion/education and enforcement of by-laws, but not eliminated		 Accidents at HHW depot may potentially disrupt terrestrial systems and resources in a small localized 	area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and	Resources	,		Indicator: Potential for Disruption Effects to Terrestrial Systems and	Resources			

TABLE C4.3 SYSTEM NET EFFECTS TABLE (continued)

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	tic Systems Including Surface and Groun	id Water Resources	
Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for effects to aquatic systems and water resources is due to discharges from HHW depot and central compost facilities, location of new central compost facility and new MRF, and litegal dumping of wastes. The incombine of Assistance features.	Advantages None
Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for disruption to aquatic systems and water resources is minimized by proper stining of new central compost facility and new MRF, and installing facility design features at new and existing compost facilities and HHW facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility Promotion/education of Direct Cost and 3Rs programs and illegal dumping or littering by-law enforcement minimizes disruption effects due to illegal dumping of wastes but does not eliminate the potential effects	and contingency on deasures, and proper sting of new facilities minimize the potential for effects. Promotion/education of programs and dumping/litering by-law enforcement also minimizes effects	Disadvantages • Potential for effects due to discharges from existing facilities • New central compost facility and MRF required which may result in additional effects • Illegal dumping of wastes is anticipated resulting in disruption effects

TABLE C4.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes or wet wastes which have increased potential for effects		Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols	and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, bioercosols and gascous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects	 Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depot 	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects	 Accidents at HHW depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator. Potential for Atmospheric Emissions			

TABLE C4.4 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Expanded Blue Box

Advantages/Disadvantages by Criterion		<u>Advantages</u> • None	Disadvantages	Potential effects may result due to accidents	 Potential for loss or removal of terrestrial systems and resources due to siting of facilities
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new central compost facility and new MRF and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depot. Effects are minimized by siting process or restricted to a small area near facility due to location of HHW depot, design features and contingency measures.			
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new MRF and new central compost facility Location of existing HHW depot at landfill site, design features at depot, and implementing contingency measurer stricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW depot may Accidents at HHW depot may	procultainty using terrostrates systems and resources in a small localized area near the depot	
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and	Resources	

TABLE C4.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		<u>Advantages</u> • None	Disadvantages • Potential for effects due to discharges from existing facilities • New central compost facility and MRF required which may result in additional effects
System Net Effects by Criterion	1 Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depot and central compost facilities, and location of new central compost facility and new MRF. The installation of design features and contingency measures, and proper siting of new facilities minimize the potential for effects.	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper sting of new central compost facility and new MRF, and installing facility design features at new and existing compost facilities and HHW facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility
Criteria/Indicator	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C4.4 SYSTEM NET EFFECTS TABLE (continued)

	_		
Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes or wet wastes which have increased potential for effects	Disadvantages - Emissions to atmosphere include dust, exhaust, odours, bioacrosols and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles Emissions including dust, odours, bioacrosols and gaseous emissions are expected at compost facilities and MRF. Exposure to these emissions may result in effects	Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depot
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to collection vehicles travelling along roads and from unloading depots or bins Some codours expected from residential composting and central composting but no effects expected	Exposure to dust, bioacrosols and gaseous emissions at compost or MRF facilities may result in effects. Accidents at HHW depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

TABLE C4.5 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Wet/Dry

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to siting of facilities
System Net Effects by Criterion		• Potential for effects to terrestrial systems and resources is a result of siting new MRP and compost facilities, and due to accidents (e.g. spills, leaks, fires, vehicle upset) at HHW depot. Effects are minimized by facility siting process or restricted to a small area near facility due to location of HHW depot, design features and contingency measures	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new MRF and compost facilities Location of existing HHW depot at landfill site, design features at depot, and implementing contingency measures restricts potential for loss or removal, in the event of an accident, to a small area	Accidents at HHW depot may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C4.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages Potential for effects due to discharges from existing facilities New MRF and compost facilities required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from HHW depot and central compost facilities, and location of new MRF and compost facilities. The installation of design features and contingency measures and proper sting of MRF and compost facilities minimize the potential for effects	
System Net Effects by Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW and compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper sting of new MRF and compost facilities, and installing facility decign features at new and existing compost and HHW facilities to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility
Criteria/Indicator	Criterion: Potential for Effects to Aqual	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C4.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No processing and composting of mixed wastes		Disadvantages Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases	Emissions from wet waste composting may result in additional effects
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, bioaerosols and gascous emissions are expected at compost facilities (particularly wet waste compost facility) and MRF. Exposure to these emissions may result in effects	Use of safety equipment and training reduces potential for effects as a result of emissions to atmosphere during accidents at HHW depot	
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unbading depots or	bins Some odours expected from residential composting and central composting but no effects expected	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities (particularly wet waste compost facility) may result in effects	Accidents at HHW depot may result in emissions to the atmosphere and potential effects. Use of safety equipment and training reduces the potential for effects.
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions			

TABLE C4.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Mixed Solid Waste Processing

Advantages/Disadvantages by Criterion		Advanlages - None	Disadvantages • Potential effects may result due to accidents • Potential for loss or removal of terrestrial systems and resources due to siting of facilities
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new MRF, central compost and mixed waste processing and compost facilities, and due to accidents (e.g. spills, least, fries, wentie upsed) at HHW depot. Effects are minimized by facilities sting process or restricted to a small area near facility due to location of HHW depot, design features and contingency measures.	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new MRF, central compost, and mixed waste processing and compost facilities processing and compost facilities. Location of existing HHW depot at landfil site, design features at depot, and implementing contingency measures restricts potential for loss or removal, in the event of an excitant to a small area.	Accidents as HHW depot may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

TABLE C4.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages	No processing and composting of mixed wastes		Disadvantages	 Emissions to atmosphere include dust, exhaust, odours, bioaerosols and gases 	 Emissions from wet waste composting may result in additional 	effects
System Net Effects by Criterion		Potential for effects to the atmospheric environment are accounted that the date of the second date of	expected one to dust and exhaust emissions from collection vehicles	Emissions including dust, odours, bioaerosols and gaseous emissions are expected at compost facilities (particularly wet waste compost facility) and MRE. Exposure to these emissions may result in effects.	 Use of safety equipment and training reduces potential for effects as a 	result of emissions to atmosphere during accidents at HHW depot		
System Net Effects by Indicator	spheric Environment	 Dust and exhaust emissions to atmosphere expected due to collection vehicles resulting about 	roads and from unloading depots or bins	Some odours expected from residential composting and central composting but no effects expected	• Exposure to dust, bioaerosols and gaseous emissions at compost or	MRF facilities (particularly wet * waste compost facility) may result in effects	Accidents at HHW depot may result in emissions to the atmosphere and	potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions						

TABLE C4.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

Peel Residential Mixed Solid Waste Processing

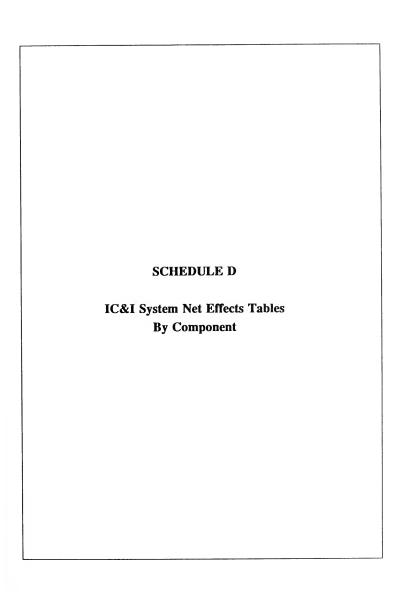
Advantages/Disadvantages by Criterion		Advantages None	Disadvantages Potential effects may result due to accidents Potential for loss or removal of terrestrial systems and resources due to stimg of facilities
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new MRF, central compost and mixed waste processing and compost facilities, and due to accidents (e.g. spills, leaks, fires, whelle upsol) at HHW depot. Effects are minimized by facilities siting process or restricted to a small area near facility due to location of HHW depot, design features and contingency measures.	
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate siting process for new MRF, central compost, and mixed waste, processing and compost facilities processing and compost facilities. Location of existing HHW depot at landfill site, design features at depot, and implementing contingency measures restricts potential for loss or removal, in the event of an architer to a small area.	Accidents at HHW depot may potentially disrupt terrestrial systems and resources in a small localized area near the depot
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources

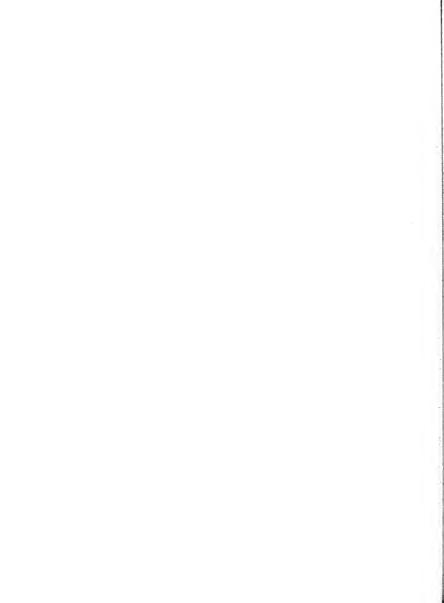
TABLE C4.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages None Disadvantages	Potential for effects due to discharges from existing facilities New MRF, central compost facility, and mixed waste processing and compost facility required which may result in additional effects
System Net Effects by Criterion	d Water Resources	Potential for effects to aquatic systems and water resources is due to location of new MRF, central compost, and mixed waste processing/compost facilities and discharges from HHW depot, central compost facilities and mixed waste processing/compost facilities and mixed waste processing/compost facilities and mixed waste investigation of design features and	confingency measures, and proper sing of new facilities minimize the potential for effects
System Net Effects by Indicator	ic Systems Including Surface and Groun	Potential for loss or removal of aquatic systems and water resources is minimized by installing design features at HHW, compost and mixed waste processing and compost facilities to prevent discharges to surface and ground waters Potential for disruption to aquatic	systems and water resources is minimized by proper siting of new MRF, central compost, and mixed waste processing/compost facilities and installing facility design features at existing compost and HHW facilities and new compost and mixed waste processing/compost facility to prevent discharges to surface and ground waters. Contingency measures further minimize potential effects from HHW facility
Criteria/Indicator	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources Indicator: Potential for Disruption	Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE C4.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages None Disadvantages Emissions to atmosthere include	dust, exhaust, odours, bioacrosolis and gases Emissions from mixed waste processing and composting may result in additional effects
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to dust and exhaust emissions from collection vehicles. Emissions including dust, odours, bioacrosols and gaseous emissions are expected at mixed waste processing/compost and compost facilities and MRF. Exposure to these emissions may result in effects Use of safety equipment and training reduces poetial for efficies as a result of emissions.	during accidents at HHW depot
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to amosphere expected due to collection vehicles travelling along roads and from unloading depots or hins Some odours expected from residential composting, central composting and mixed waste processing/compost facility but no effects expected Exposure to dust, bioaercools and gaseouse emissions a mixed waste processing/compost compost facility but no effects expected	MRF facilities may result in effects Accidents at HHW depot may result in emissions to the amosphere and potential effects. Use of safety equipment and training reduces the potential for effects
Criteria/Indicator	Criterion: Potential for Esfects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

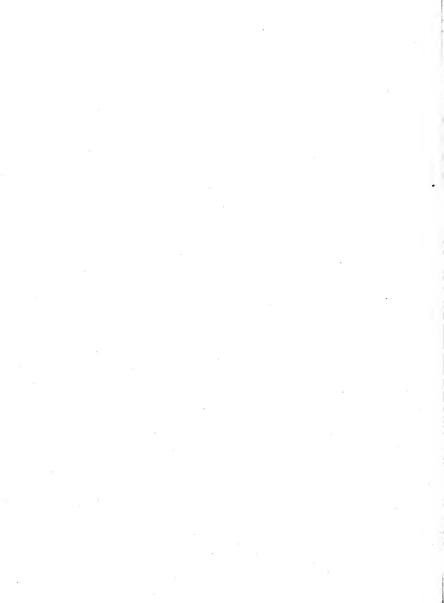




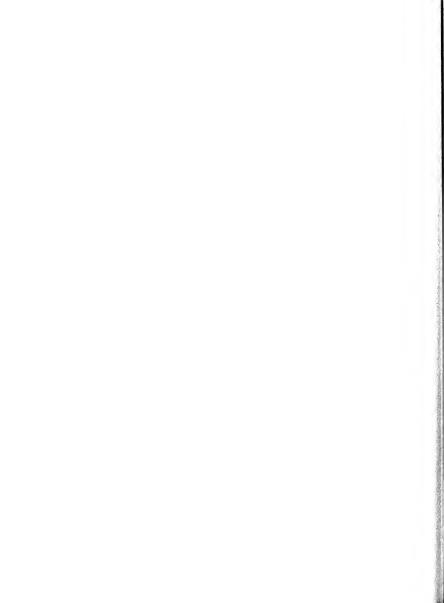
1. INTRODUCTION

The IC&I system net effects tables by component are presented in the following order:

Existing System	-	Tables D1.1 to D1.5
Existing/Committed System	-	Tables D2.1 to D2.5
Extended 3Rs Regulations System	-	Tables D3.1 to D3.5
Expanded 3Rs Regulations System	-	Tables D4.1 to D4.5
Expanded 3Rs Regulations with Organics		
System	-	Tables D5.1 to D5.5
Processing All IC&I Waste System	-	Tables D6.1 to D6.5







SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D1.1

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

IC&I Existing

Natural
Potential for Effects to Terrestrial Systems and Resources
Potential for Loss or Removal of Terrestrial Systems and Resources

		,
IC&I Collection - Wet Wastes Voluntary source separation of IC&I wet wastes Separate collection of IC&I wet wastes	IC&I Collection - Dry Wastes Voluntary source separation of dry recyclables by some IC&I generators Collection of source separated dry recyclables by private haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Landfill bans on specified materials	Component Category/ Components
 No effects identified 	 No effects identified 	Component Environmental Effects
None required	None required	Mitigation/ Enhancement
No effects identified	No effects identified	Component Net Effects

TABLE DI.1 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Centralized windrow composting of source separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	Component Category/ Components
 No effects identified 	 No effects identified 	Component Environmental Effects
None required	None required	Mitigation/ Enhancement
No effects identified	No effects identified	Component Net Effects

TABLE D1.1 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required	• None required
Component Environmental Effects	No effects identified	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	Voluntary waste reduction actions by Clear generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP)	(C&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP)

TABLE DI.1
SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component
Components	Environmental Effects	Enhancement	Net Effects
IC&I Promotion and Education C&I Information houline Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations	No effects identified	None required	No effects identified

TABLE D1.2 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

IC&I Existing Natural Dosential for Effects to Terrestrial Systems and Reso

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Collection of source separated dry recyclables by private haulers and recyclan. • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depos at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I wet wastes • Separate collection of IC&I wet wastes

TABLE D1.2
SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	C&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I secure - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I lecations - Vermicomposting at some IC&I lecations - Rendering of food wastes from IC&I sector

TABLE D1.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required	None required
Component Environmental Effects	No effects identified	No effects identified	No effocts identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	IC&I Reduction Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP)	IC&I Programs Voluntary waste audits performed by IC&I generators Independent voluntary waste reduction programs in private companies Voluntary packaging reporting by packaging users (NAPP)

TABLE D1.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
	No effects identified	None required	No effects identified
Promotion/education program focused			
on reducing waste disposed by the			
	-		
_			
Promotion/education of IC&I waste			
reduction by non-profit organizations			
Promotion/education of IC&I waste			

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D1.3

SYSTEM:

CRITERIA GROUP:

CRITTERIA:

INDICATOR:

IC&I Existing Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	C&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depois at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes Voluntary source separation of IC&I wet wastes Separate collection of IC&I wet wastes

TABLE D1.3 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	None required	Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management prond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being composition of wastes being composition staging and treat confaminants, as required
Component Environmental Effects	No effects identified	Compost facility may generate leacheac containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centers for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	IC&I Processing - Wet Wastes - Centralized windrow composing of source separated IC&I organics - On-site composting of source separated loganics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE D1.3 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	No effects identified	• None required	No effects identified
IC&I Reduction Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP)	No effects identified	None required	No effects identified
IC&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (VAPP)	No effects identified	• None required	No effects identified

TABLE D13 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Component Environmental Effects Mitigation/ Enhancement Component Components Environmental Effects Enhancement Net Effects comotion and Education • No effects identified • None required • No effects identified ducing waste disposed by the all municipality • Sector, carried out by the all municipality • No effects identified and monicipality • One profit organizations to TC&L waste • No effects identified											
Component Environmental Effects No effects identified None requ	Component Net Effects		No effects identified								
o o o o o o o o o o o o o o o o o o o	Mitigation/ Enhancement		None required								
Component Category/ Components Omotion and Education information holdine otion/deducation program focused ducing waste disposed by the sector, carried out by the hal municipality otion/deducation of IC&I waste tion by non-profit organizations otion/deducation of IC&I waste otion/deducation of IC&I waste	Component Environmental Effects		 No effects identified 								
IC&I Promon on re- IC&I Promon region region reduce	Component Category/ Components	IC&I Promotion and Education	IC&I information hotline	Promotion/education program focused	on reducing waste disposed by the	IC&I sector, carried out by the	regional municipality	 Promotion/education of IC&I waste 	reduction by non-profit organizations	 Promotion/education of IC&I waste 	reduction by associations

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D1.4

CRITERIA GROUP: SYSTEM:

IC&I Existing

Natural INDICATOR: CRITERIA:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depote at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I wet wastes • Separate collection of IC&I wet wastes

TABLE D1.4 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	ty to Potential for disruption to aquatic systems and water resources due to systems and water resources due to leachate, silt and organic materials is ment minimized by facility design features to prevent discharges to surface and rate ground waters ity). Ity to consider the construction of the construc
Mitigation/ Enhancement	None required	Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storm water management pond) and to prevent usurface water moff from entering compost area (e.g. berms, ditches around facility). Install features at compost facility prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composite of usefulty, remove and treat contraminants as remained.
Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water runoff from compost facility may disrupt surface water bodies by buildup of silt and organic materials
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry revolables collocted from the IC&I sector, owned and operated by the private sector when a sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclables	IÇ&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I secure - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE DI.4 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food wastes for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	No effects identified	• None required	No effects identified
C&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP)	No effects identified	• None required	No effects identified
(C&1 Programs • Voluntary waste audits performed by IC&1 generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP)	No effects identified	• None required	No effects identified

TABLE D1.4 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Component Environmental Effects Mitigation/ Enhancement Component Note Effects IC&I Promotion and Education • IC&I Information holline • Promotion/education program focused on reducting waste disposed by the reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • No effects identified • None required • No											
Component Effects Environmental Effects D The consequence of the confects identified on the confect	Component Net Effects		No effects identified								
nn rocused rube the the the the the the the the the th	Mitigation/ Enhancement		None required								
Component Category/ Components IC&I Promotion and Education IC&I information holtine Promotion/education program focused on reduction waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion-deducation of IC&I waste reduction by associations	Component Environmental Effects		 No effects identified 								
	Component Category/ Components	IC&I Promotion and Education	IC&I information hotline	Promotion/education program focused	on reducing waste disposed by the	IC&I sector, carried out by the	regional municipality	 Promotion/education of IC&I waste 	reduction by non-profit organizations	 Promotion/education of IC&I waste 	reduction by associations

TABLE D1.5 NET EFFECTS TABLE BY COMPONENT

CRITERIA GROUP: CRITERIA: SYSTEM:

INDICATOR:

IC&I Existing

Natural
Potential for Effects to Atmospheric Environment
Potential for Atmospheric Emissions

Component Net Effects	Potential for release of dust to the atmosphere by collection vehicles is reduced. Dust and exhaust emissions are still expected	Potential for release of dust to the atmosphere by collection vehicles is reduced. Dust and exhaust emissions are still expected
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular vehicle maintenance	Decrease speed of collection vehicles Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere
Component Category/ Components	C&1 Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&1 generators • Collection of source separated dry recyclables by private haulers and recyclas • Curbside collection of IC&1 recyclas • Curbside collection of IC&1 recyclables in some areas by municipal forces • IC&1 depots at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I wet wastes • Separate collection of IC&I wet wastes

TABLE D1.5 NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioaerosols within facility. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost
Mitigation/ Enhancement	Provide ventilation system to capture building air for removal of dast and bioacrosols and replace with clean air, either at work stations or for entire facility Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols (e.g. respirator) Daily cleaning of facility equipment and floors	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream - Proper design and operation of compost facility such as maintaining aerobic conditions and limited storage of pureascible feedstocks before composting Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters
Component Environmental Effects	 Processing of recyclables may generate dust and bioaerosol emissions within the facility resulting in effects 	Air emissions in the broad categories of dust, bioearcosols and gascous emissions (volatile organic compounds) are released from compons! are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere.
Component Category/ Components	IC&I Processing - Dry Wastes - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	C&l Processing - Wet Wastes - Centralized windrow composting of source separated IC&l organics - On-site composting of source separated organics generated by the IC&l sector - Centralized composting of IC&l organics in in-vessel system - Vermicomposting at some IC&l locations - Rendering of food wastes from IC&l sector

TABLE D1.5 NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects		No effects identified		No effects identified
Mitigation/ Enhancement	Minimize contact with and general exposure to open air during shredding, mixing, sorting, tuming and screening of material Limit operations during adverse weather conditions (i.e. windy weather)	None required		None required
Component Environmental Effects		No effects identified		No effects identified
Component Category/ Components		IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed by Use of food waste for human consumption	Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging IC&I Reduction	Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 23% by the year 2000 (NAPP)

TABLE D1.5 NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IÇ&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP)	IC&I information and Education IC&I information hotline Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations





TABLE D2J SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA:

IC&I Existing/Committed
Natural
Potential for Effects to Ter

										Т		
Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources	Component Net Effects	No effects identified									No effects identified	
	Mitigation/ Enhancement	None required									None required	
	Component Environmental Effects	• No effects identified									 No effects identified 	
CRITERIA: Potential for Los INDICATOR: Potential for Los	Component Category/ Components	K&I Collection - Dry Wastes Voluntary source separation of dry	recyclables by some IC&I generators • Mandatory source separation of designated materials by major	generators Collection of source separated dry	recyclables by private haulers and recyclers	• Curbside collection of IC&I	municipal forces	IC&I depots at transfer stations for	use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes	 Voluntary source separation of IC&I were wastes 	Separate collection of IC&I wet wastes

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	Cert Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I lecations - Vermicomposting of food wastes from IC&I sector

Comnonent Category/	Component	Mitioation/	Component
Components	Environmental Effects	Enhancement	Net Effects
IC&I Reuse			
Reuse by IC&I generators through	 No effects identified 	None required	 No effects identified
waste exchange programs			
Community-based reuse programs for small IC&1 generators			
Use of food wastes as animal feed			
Use of food waste for human			
consumption			
 Landspreading of IC&I organics 			
Refilling of IC&I containers and			
packaging			
Use of reusable packaging			
IC&I Reduction			
Voluntary waste reduction actions by	No effects identified	• None required	No effects identified
IC&I generators		ŀ	
Voluntary reduction of packaging			
waste by 25% by the year 2000			
(NAPP)			
Mandatory development of waste			
reduction action plans by major IC&I			
generators			
Mandatory development of packaging			•
reduction action plans by major			
packaging generators			

TABLE D2.1
SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by major IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	C&I Promotion and Education C&I information hodine Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees by major IC&I generators

TABLE D2.2 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA: INDICATOR:

IC&I Existing/Committed Natural

	ial for Effects to Terrestrial Systems and Resources	ial for Disruption Effects to Terrestrial Systems and Resources
1	Potential for E	ō

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Mandatory source separation of designated materials by major generators • Collection of source separated dry recyclables by private haulers and recycles • Collection of source separated dry recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depos at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I wet wastes • Separate collection of IC&I wet wastes

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector • Processing of IC&I sector recyclables in municipal MRF? • Processing of IC&I sector recyclables by small private sector recyclables	Centralized windrow composting of source separated IC&I roganics On-site composting of source separated organics generated by the IC&I source. Certralized composting of IC&I organics in in-vessel system vermicomposting at some IC&I locations Vermicomposting at some IC&I locations Vermicomposting of food wastes from IC&I sector

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by major IC&I generators • Mandatory peckaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	IC&I Promotion and Education • IC&I information houline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by major IC&I generators

TABLE D2.3 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

Natural

INDICATOR:

CRITERIA:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems including Surface and Ground Water Resources IC&I Existing/Committed

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Mandatory source separation of designated materials by major generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes - Voluntary source separation of IC&I wet wastes - Separate collection of IC&I wet wastes

Component Net Effects	No effects identified	Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	• None required	Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management profit and to prevent management profit and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being composition of wastes being composition is serviced.
Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources
Component Category/ Components	IC&I Processing - Dry Wastes - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	K&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I secure - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed or Use of food waste for human consumption Landspreading of IC&I containers and packaging Use of reusable packaging	[C&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (KAAPP) • Mandatory development of waste reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major

TABLE D23
SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by major IC&I generators • Mandatory peckaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	IC&I Promotion and Education - IC&I information hotline - Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality - Promotion/education of IC&I waste reduction by non-profit organizations - Promotion/education of IC&I waste reduction by associations - Promotion/education of IC&I waste reduction by associations - Mandatory posting of waste reduction plans for review by employees by major IC&I generators

TABLE D2.4 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

INDICATOR: CRITERIA:

Existing/Committed
Natural
Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources

Resources
Water
Ground
Surface and
Including 5
ystems
Aquatic S
Effects to
Disruption
[or
Potential

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some IC&I generators • Mandatory source separation of designated materials by major generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depois at transfer stations for use by small business generators • Landfill bans on specified materials	IÇ&I Collection - Wet Wastes - Voluntary source separation of IC&I wet wastes - Separate collection of IC&I wet wastes

Component Net Effects	No effects identified	Potential for disruption to aquatic systems and water resources due to leachate, sitt and organic materials is minimized by facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	• None required	Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storm water management pond) and to prevent surface water most from entering compost area (e.g. berms, ditches around facility). Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate to collection). Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composited to identify, remove and reat gontaminants as required.
Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water nunoff from compost facility may disrupt surface water bodies by buildup of silt and organic materials
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	Centralized windrow composting of source separated IC&I organics On-site composting of source separated IC&I organics Celt sector Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector

ts st		
Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	ICÉI Reuse Reuse by ICÉI generators through waste exchange programs Community-based reuse programs for small ICÉI generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of ICÉI containers and packaging Use Of rousable packaging	IC&I Reduction Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (IAAPP) Mandatory development of waste reduction action plans by major IC&I generators Mandatory development of packaging reduction action plans by major IC&I generators Mandatory development of packaging reduction action plans by major packaging generators

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by major IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	IC&I Promotion and Education IC&I information holline Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees by major IC&I generators

TABLE D2.5 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

IC&I Existing/Committed Natural

CRITERIA: INDICATOR:

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

	L
'∑	Component Environmental Effects
on veh ay rest aust to	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere
on vehicle ay result aust to th	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioacrosols within MRF. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost
Mitigation/ Enhancement	Provide ventilation system to capture building air for removal of dust and bioacrosols and replace with clean air, either at work stations or for entire facility Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols (e.g. respirator) Daily cleaning of facility equipment and floors	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream or Proper design and operation of compost facility such as manitaring aerobic conditions and limited storage of putrescible feedstocks before composting
Component Environmental Effects	Processing of recyclables may generate dust and bioacrosol emissions within the facility resulting in effects	Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere.
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclables	C&1 Processing - Wet Wastes Centralized windrow composting of source separated IC&1 organics On-site composting of source separated organics generated by the IC&1 sector Centralized composting of IC&1 organics in in-vessel system Vermicomposting Rendering of food wastes from IC&1 sector

Component Net Effects		No effects identified
Mitigation/ Enhancement	Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters and biofilters. Minimize contact with and general exposure to open air during shredding, mixing, sorting, turning and screening of material. Limit operations during adverse weather conditions (i.e. windy weather)	None required
Component Environmental Effects		No effects identified
Component Category/ Components		IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reduction Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) Mandatory development of waste reduction action plans by major IC&I generators Mandatory development of packaging reduction action plans by major packaging generators	C&I Programs • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by major IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Promotion and Education			
IC&I information hotline	No effects identified	None required	No effects identified
 Promotion/education program focused 			
on reducing waste disposed by the			
IC&I sector, carried out by the			
regional municipality			
 Promotion/education of IC&I waste 			
reduction by non-profit organizations			
 Promotion/education of IC&I waste 			
reduction by associations			
 Mandatory posting of waste reduction 			
plans for review by employees by			
major IC&I generators			





SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D3.1

SYSTEM:

CRITERIA GROUP:

CRITERIA:

INDICATOR:

IC&I Extended 3Rs Regulations Natural

Potential for Effects to Terrestrial Systems and Resources Potential for Loss or Removal of Terrestrial Systems and Resources

	T	
Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Mandatory source separation of designated materials by most IC&I generators in GTA • Voluntary source separation of dry recyclables by small IC&I generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclable in some areas by municipal forces • IC&I depots a transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes

Component Net Effects	No loss or removal of terrestrial systems or resources expected due to sting of new MRFs	No effects identified
Mitigation/ Enhancement	Locate new MRFs in areas of compatible land use (i.e. industrial areas) through sting process	None required
Component Environmental Effects	MRFs require site area which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agriculture resources	No effects identified
Component Category/ Components	C&I Processing - Dry Wastes - Additional processing capacity for dry recyclables required - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics on-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	IÇ&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	C&I Promotion and Education • IC&I information houline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D3.2

SYSTEM:

INDICATOR:

CRITERIA GROUP: CRITERIA:

IC&I Extended 3Rs Regulations

Natural Potential for Effects to Terrestrial Systems and Resources Potential for Disruption Effects to Terrestrial Systems and Resources

	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes			
Mandatory source separation of designated materials by most IC&I generators in GTA Voluntary source separation of dry recyclables by small IC&I generators recyclables by private haulers and recyclers collection of source separated dry recyclables by private haulers and recyclers curbside collection of IC&I recyclables in some areas by municipal forces ir C&I depots at transfer stations for use by small business generators Landfill bans on specified materials	No effects identified	• None required	No effects identified
IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes	No effects identified	None required	No effects identified

TABLE D3.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing - Dry Wastes			
Additional processing capacity for dry recyclables required Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	No effects identified	None required	No effects identified
IC&I Processing - Wet Wastes Centralized windrow composting of source separated IC&I organics On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I organics in in-vessel system - Vermicomposting at some IC&I organics - Rendering of food wastes from IC&I sector	No effects identified	• None required	No effects identified

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effocts identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	C&I Promotion and Education • IC&I information hottine • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators

TABLE D3.3 SYSTEM NET EFFECTS TABLE BY COMPONENT

System: Criteria Group: Criteria:

INDICATOR:

IC&I Extended 3Rs Regulations

Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/	IC&I Collection - Dry Wastes Mandatory source separation of designated materials by most IC&I generators in GTA Voluntary source separation of dry recyclables by small IC&I generators Collection of source separated dry recyclables by private haulers and recycles Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depois at transfer stations for use by small business generators IC&I depois at transfer stations for use by small business generators - Landfill bans on specified materials	IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes

	Component Net Effects	No effects identified	Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters
	Mitigation/ Enhancement	None required	Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management pond, and to prevent surface water moff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of leachate to prevent discharge of leachate collection Ongoing monitoring of any surface water collected on-site, leachate and compostion of wastes being composted to identify and treat contaminants, as required
	Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources
-	Component Category/ Components	iC&I Processing - Dry Wastes - Additional processing capacity for dry recyclables required - Processing of specific dry materials in specially designed facilities of the processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	C&1 Processing - Wet Wastes Centralized windrow composting of source separated IC&I organics On-site composting of source separated organics generated by the IC&I sector

TABLE D33 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Consumption Canadyreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	No effects identified	• None required	No effects identified	
IC&I Reduction - Voluntary waste reduction actions by IC&I generators - Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) - Mandatory development of waste reduction action plans by most IC&I generators - Mandatory development of packaging reduction action plans by major reduction action plans by major packaging generators	. No effects identified	None required	No effects identified	

TABLE D33 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component
Components	Environmental Effects	Ennancement	Net Effects
performed by	 No effects identified 	None required	 No effects identified
small 10001 generators Independent voluntary waste			
reduction programs in private			
companies			
 Mandatory waste audits by most 			
IC&I generators			
Mandatory packaging audits by major			
packaging generators			
 Voluntary packaging reporting by 			
packaging users (NAPP)			
IC&I Promotion and Education			
IC&I information hotline	No effects identified	None required	 No effects identified
Promotion/education program focused			
on reducing waste disposed by the			
IC&I sector, carried out by the			
regional municipality			
Promotion/education of IC&I waste			
reduction by non-profit organizations			
 Promotion/education of IC&I waste 			
reduction by associations			
 Mandatory posting of waste reduction 			
plans for review by employees by			
most IC&1 generators			

TABLE D3.4 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

CRITERIA GROUP: CRITERIA: INDICATOR:

IC&I Extended 3Rs Regulations Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes Mandatory source separation of designated materials by most IC&I generators in GTA Voluntary source separation of dry recyclables by small ICA&I generators Collection of source separated dry recyclables by private haulers and recyclars Curbside collection of IC&I recyclars in some areas by municipal forces TC&I deptors at transfer stations for use by small business generators Landfill bans on specified materials	IC&I Collection - Wet Wastes Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes

TABLE D3.4 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component	No disruption to surface water resources expected due to sting of new MRFs or expanding existing MRFs	Potential for disruption to aquatic systems and water resources due to leachate, silt and organic materials is minimized by facility design features to prevent discharges to surface and ground waters
Mitigation/	Locate facility in compatible area (e.g. industrial area) with storm water management features in place (e.g. storm sewers, storm water retention pond)	Install features at compost facility to prevent dischage of contaminants, silt or compost matter to surface water (e.g. storm water management pond) and to prevent surface water morn from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent dischage of leachtate to ground water (e.g. liner, leachtate collection) Ongoing monitoring of any surface water collected on-site, leachtate and composition of wastes being composition of wastes being treat contaminants as required treat contaminants as required.
Component	Expansion of existing or new MRFs covering large area may disrupt local surface water drainage patterns	Compost facility may generate leachate containing constituents in concentrations that may be harmful when dischaged to ground and surface waters and disrupt aquatic biological systems Surface water runoff from compost facility may disrupt surface water bodies by build up of silt and organic materials
Component Category/	IC&I Processing - Dry Wastes Additional processing capacity for dry recyclables required Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector with a sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables	C&1 Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE D34 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

	T	
Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	C&I Reduction Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) Mandatory development of waste reduction action plans by most IC&I generators Mandatory development of packaging reduction action plans by major packaging generators

TABLE D34 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	C&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	(C&I Promotion and Education

TABLE D3.5 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA: INDICATOR:

IC&I Extended 3Rs Regulations

Natural
Potential for Effects to Atmospheric Environment
Potential for Atmospheric Emissions

Component Net Effects	Potential for release of dust to the amosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to increase in collection vehicle traffic	Potential for release of dust to the atmosphere by collection vehicles is reduced. Dust and exhaust emissions are still expected
Mitigation/ Enbancement	Decrease speed of collection vehicles Regular vehicle maintenance reduced. Increased dust and exhauring the maintenance reduced. Increased dust and exhauring the missions are still expected due to increase in collection vehicle traffic.	Decrease speed of collection vehicles Regular vehicle maintenance
Component Environmental Effects	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase due to increase in collection vehicle traffic.	Collection vehicles travelling along roads may result in release of dust and exhaust to the atmosphere
Component Category/ Components	IC&I Collection - Dry Wastes Mandatory source separation of designated materials by most IC&I generators in GTA Voluntary source separation of dry recyclables by small ICAR generators Collection of source separated dry recyclables by private haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Landfill bans on sypecified materials	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes

TABLE D3.5 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component	Net Effects	Emissions to atmosphere will be generated in the form of dust and bioacrosols within facilities. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for atmospheric emissions is reduced but not climinated. No effects expected due to air emissions from compost
Mitication/	Enhancement	Provide ventilation system to capture building air for removal of dust and bioacrosols and replace with clean air, either at work stations or for entire facility Provide captingment to individual staff to restrict or prevent exposure to dust and bioacrosols (e.g. respirator) Daily cleaning of facility equipment and floors	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining acrobic conditions and limited storage of putressible feedstocks before composting. Install emission controls to capture and treat process and building (if enclosed) arr. Types of emission control include chemical scrubbers and biofilters
Component	Environmental Effects	Processing of recyclables may generate dust and bioacrosol emissions within the facilities resulting in effects	Air emissions in the broad categorics of dust, bioacrosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere.
Component Category/	Components	IC&I Processing - Dry Wastes - Additional processing capacity for dry recyclables required - Processing of specific dry materials in specially designed facilities of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs in municipal MRFs - Processing of IC&I sector recyclables by small private sector	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE D3.5 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

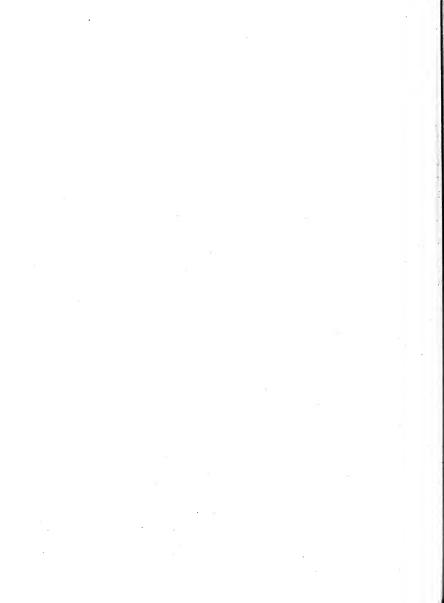
Component Net Effects		No effects identified
Mitigation/ Enhancement	Minimize contact with and general exposure to open air during shredding, mixing, sorting, turning and screening of maderial Limit operations during adverse weather contitions (i.e. windy weather)	None required
Component Environmental Effects		No effects identified
Component Category/ Components		IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging

TABLE D3.5 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators	No effects identified	• None required	No effects identified
C&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	No effects identified	None required	No effects identified

TABLE D3.5 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Promotion and Education			
IC&I information hotline	No effects identified	None required	No effects identified
Promotion/education program focused			
on reducing waste disposed by the			
IC&I sector, carried out by the			
regional municipality			
Promotion/education of IC&I waste			
reduction by non-profit organizations			
Promotion/education of IC&I waste			
reduction by associations			
Mandatory posting of waste reduction			
plans for review by employees by			
most IC&I generators			





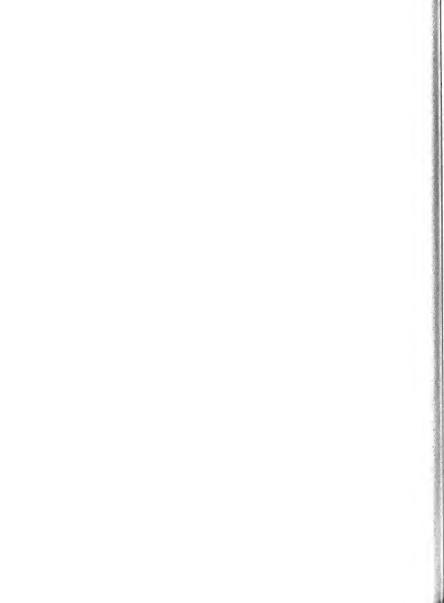


TABLE D4.1 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM:

CRITERIA GROUP:

IC&I Expanded 3Rs Regulations :

CRITERIA: Indicator:

vanua.
Potential for Effects to Terrestrial Systems and Resources
Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some small IC&I generators generators Amandaory source separation of expanded list of designated materials by most IC&I generators • Collection of source separated dry recyclebs by private haulers and recycles • Curbisde collection of IC&I recyclables in some areas by municipal forces • Curbisde depots at transfer stations for use by small business generators • Landfill bans on specified materials	IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes

TABLE D4.1 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No loss or removal of terrestrial systems or resources expected due to sting of new MRFs	No effects identified
Mitigation/ Enhancement	Locate new MRFs in areas of compatible land use (i.e. industrial areas) through siting process	• None required
Component Environmental Effects	MRFs require site area which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agriculture resources	No effects identified
Component Category/ Components	IC&I Processing - Dry Wastes - Additional processing capacity for wider list of dry materials required - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector, owned and operated by the private sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-west system - Vermicomposting at some IC&I locations - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE D4.1 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&R (generators small IC&R) generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refilable containers Use of retusable packaging	C&I Reduction • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by most IC&I generators packaging generators

TABLE D4.1 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required .
Component Environmental Effects	No effects identified	• No effects identified
Component Category/ Components	IC&I Programs • Volunary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory peckaging audits by major peckaging generators • Voluntary packaging reporting by packaging users (NAPP)	IC&I Promotion and Education • IC&I information holline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators

TABLE D4.2 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

IC&I Expanded 3Rs Regulations

Natural CRITERIA:

INDICATOR:

Potential for Effects to Terrestrial Systems and Resources Potential for Disruption Effects to Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes - Voluntary source separation of dry recyclables by some small IC&I generators - Mandatory source separation of expanded list of designated materials by most IC&I generators - Collection of source separated dry recyclables by private haulers and recyclab. - Curbside collection of IC&I recyclables in some areas by municipal forces - IC&I depois at transfer stations for use by small business generators - Landfill bans on specified materials	IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes

TABLE D4.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

TABLE D4.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of retilable containers Use of retusable packaging	C&L Reduction • Voluntary waste reduction actions by small I/C&L generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators

TABLE D4.2 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	I. C&I information hothin I. C&I information hothin Promotion/deducation program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/deducation of IC&I waste reduction by non-profit organizations Promotion/deducation of IC&I waste reduction by non-profit organizations Promotion/deducation of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees by most IC&I generators most IC&I generators

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D4.3

CRITERIA GROUP: CRITERIA: SYSTEM:

INDICATOR:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems Including Surface and Ground Water Resources IC&I Expanded 3Rs Regulations Natural

Component
Mitigation/
Component
Component Category/

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by some small IC&I generators • Mandatory source separation of expanded list of designated materials by most IC&I generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • IC&I depoils at transfer stations for use by small business generators • Landfill bans on specified materials	LC&I Collection - Wet Wastes Voluntary source separation of IC&I generated organics. Separate collection of IC&I wet wastes

TABLE D43 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	None required	Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management pond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility) Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Orgoing monitoring of any surface water collection of wastes being composition of wastes being composition of wastes being composited to identify and treat contaminants, as required.
Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources
Component Category/ Components	IC&I Processing - Dry Wastes - Additional processing capacity for wider list of dry materials required - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector, owned and operated by the private sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics on-site composting of source separated organics generated by the IC&I secure. - Centralized composting of IC&I organics in in-vessel system organics in in-vessel system vermicomposting at some IC&I locations - Vermicomposting at some IC&I locations of food wastes from IC&I sector

TABLE D43 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components Components IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed consumption Use of food waste for human Consumption Landspreading of IC&I organics	Component Environmental Effects No effects identified	Mitigation/ Enhancement None required	Component Net Effects No effects identified
- Use of refilable containers - Use of reusable packaging IC&I Reduction - Voluntary waste reduction actions by small IC&I generators - Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) - Mandatory development of waste reduction action plans by most IC&I generators - Mandatory development of packaging recution action plans by most IC&I generators - Mandatory development of packaging recution action plans by major nackaging accountains and activities activities action plans by major	No effects identified	• None required	No effects identified

TABLE D43 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging agentators • Voluntary packaging reporting by packaging generators • Voluntary packaging resporting by packaging users (NAPP)	IC&I Promotion and Education IC&I information houline Promotion/education program focused on reducing waste disposed by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Promotion/education of IC&I waste reduction by associations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees by most IC&I generators

TABLE D4.4 SYSTEM NET EFFECTS TABLE BY COMPONENT

CRITERIA GROUP: CRITERIA: SYSTEM:

INDICATOR:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources IC&I Expanded 3Rs Regulations Natural

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes			
Voluntary source separation of dry recyclables by some small IC&I generators Mandatory source separation of expanded list of designated materials by most IC&I generators Collection of source separated dry recyclets by private haulers and recyclets Curbside collection of IC&I recyclables in some areas by municipal forces Curbside so in some areas by municipal forces IC&I depos at transfer stations for use by small business generators Landfill bans on specified materials	No effects identified	None required	• No effects identified
IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes	No effects identified	None required	No effects identified

TABLE D4.4 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No disruption to surface water resources expected due to siting of new MRFs or expanding existing MRFs	Potential for disruption to aquatic systems and water resources due to leachate, silt and organic materials is minimized by facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	Locate facility in compatible area (e.g. industrial area) with storm water management features in place (e.g. storm sewers, storm water retention pond)	Install features at compost facility to prevent discharge of contaminants, sait or compost matter to surface water (e.g. storm water management pond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility). Install features at compost facility to prevent discharge of leachtate collection? Ongoing monitoring of any surface water collection of wastes being compostict of wastes being composted to identify, remove and treat contaminants as required.
Component Environmental Effects	Expansion of existing or new MRFs covering large area may disrupt local surface water drainage patterns	Compost facility may generate leachage containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems. Surface water tunoff from compost facility may disrupt surface water bodies by buildup of silt and organic materials.
Component Category/ Components	IC&I Processing - Dry Wastes - Additional processing capacity for wider list of dry materials required - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector - Processing of IC&I sector recyclables in municipal MRFs - Processing of IC&I sector recyclables by small private sector recyclables	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

TABLE D44 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reuse	. No affacts identified	. None remited	No effects identified
Kebes by Lext generators unough waste exchange programs Community-based reuse programs for small IC&I generators Ixe of food wastes as animal feed	NO GRECES INCHIDITION	name reduned	TO CHOCK INCHIENCE
Use of food waste for human consumption			
Landspreading of IC&I organics Use of refilable containers Use of reusable packaging			
IC&I Reduction			
Voluntary waste reduction actions by small IC&I generators	 No effects identified 	• None required	No effects identified
 Voluntary reduction of packaging waste hy 25% by the year 2000 			
(NAPP)			
 Mandatory development of waste 			
reduction action plans by most IC&I			
generators			
Mandatory development of packaging			
reduction action plans by major			
packaging generators			

TABLE D44 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies. • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	IC&I Promotion and Education IC&I information hotime • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators

TABLE D4.5 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA: INDICATOR:

IC&I Expanded 3Rs Regulations Natural

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
IC&I Collection - Dry Wastes	Collection vehicles travelling along	vehicles	 Potential for release of dust to the 	
recyclables by some small IC&I generators Mandatory source separation of	roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase due	Regular vehicle maintenance	amosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to	
expanded list of designated materials by most IC&I generators Collection of source separated dry	to increase in conection venicle traffic		increase in collection vehicle traffic	
recyclers Curbside collection of IC&I				
recyclables in some areas by				
IC&I depots at transfer stations for				
use by small business generators Landfill bans on specified materials				
IC&I Collection - Wet Wastes				_
Voluntary source separation of IC&I anneared organics	Collection vehicles travelling along roads may result in release of dust	Decrease speed of collection vehicles Remilar vehicle maintenance	Potential for release of dust to procenhage by collaction validles is	
Separate collection of IC&I wet wastes	and exhaust to the atmospehre	Andrew Mariantan	reduced. Dust and exhaust emissions are still expected	

TABLE D45 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioarcrosols within facility. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for atmospheric emissions is reduced but not eliminated. No effects expected due to air emissions from compost
Mitigation/ Enhancement	Provide ventilation system to capture building air for removal of dust and bioaerosols and replace with clean air, either at work stations or for entire facility Provide equipment to individual staff to restrict or prevent exposure to dust and bioaerosols (e.g. respirator) Daily cleaning of facility equipment and floors	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from wase stream compost facility such as maintaining aerobic conditions and firmled storage of purescible feedstocks before compostile mission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters
Component Environmental Effects	Processing of recyclables may generate dust and bioacrosol emissions within the facility resulting in effects	Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere.
Component Category/ Components	IC&L Processing - Dry Wastes - Additional processing capacity for wider list of dry materials required - Processing of specific dry materials in specially designed facilities - Processing centres for a wide range of dry recyables collected from the IC&L sector, owned and operated by the private sector - Processing of IC&L sector recyclables in municipal MRFs - Processing of IC&L sector recyclables by small private sector recyclables	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector

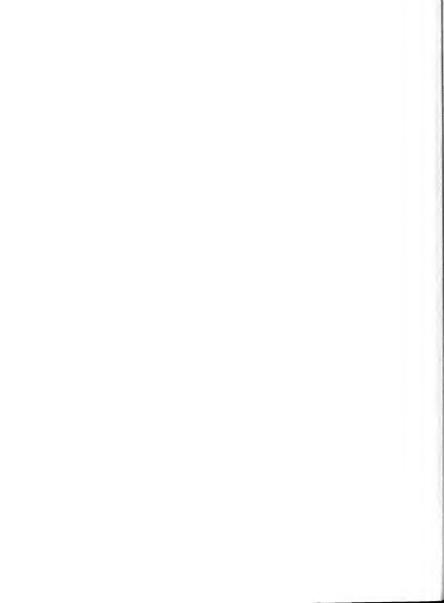
TABLE D45 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects		No effects identified	No effects identified
Mitigation/ Enbancement	Minimize contact with and general exposure to open air during shredding, mixing, sorting, turning and screening of material Limit operations during adverse weather conditions (i.e. windy weather)	• None required	None required
Component Environmental Effects		No effects identified	No effects identified
Component Category/ Components		ICE I Reuse Reuse by ICE I generators through waste exchange programs Community-based reuse programs for small ICE I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of ICE to regards Landspreading of ICE to regards Use of refillable containers Use of refillable containers	IC&I Reduction Voluntary waste reduction actions by small IC&I generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) Mandatory development of waste reduction action plans by most IC&I generators Mandatory development of packaging reduction action plans by most IC&I generators Mandatory development of packaging reduction action plans by major packaging generators

TABLE D4.5 SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&1 Programs • Voluntary waste audits performed by small IC&1 generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&1 generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	C& I Promotion and Education C& I information houline Promotion/education program focused on reducing waste disposed by the IC& I secure, carried out by the regional municipality Promotion/education of IC& I waste reduction by non-profit organizations Promotion/education of IC& I waste reduction by non-profit organizations Promotion/education of IC& I waste reduction by associations Mandatory posting of waste reduction plans for review by employees by most IC& I generators Mandatory posting of waste reduction plans for review by employees by most IC& I generators Mandatory Remeadors Remea





SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D5.1

SYSTEM: CRITERIA GROUP:

IC&I Expanded 3Rs Regulations with Organics

INDICATOR: CRITERIA:

Natural
Potential for Effects to Terrestrial Systems and Resources
Potential for Loss or Removal of Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes - Voluntary source separation of dry recyclables by small (C&I generators - Mandatory source separation of designated materials by most generators - Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces - Curbiside collection of IC&I depots at transfer stations for use by small business generators - Landfill hans on specified materials	IC&I Collection - Wet Wastes Mandatory source separation of wet wastes by designated IC&I generators Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes

Component Net Effects	No loss or removal of terrestrial systems and resources expected due to sting new MRFs	Potential for loss or removal of terrestrial systems and reosurces is minimized but not eliminated by site selection process and optimal design of compost facilities
Mitigation/ Enhancement	Locate new MRFs in areas of compatible land use (i.e. industrial areas) through stiing process	Locate compost facilities in areas of compatible land use (i.e. industrial lands, landfill site, agricultural lands) through sitting process Design facilities with optimal process method and capacity to reduce number of facilities and area required
Component Environmental Effects	MRFs require site area which may be of sufficient size resulting in the localized losstremoval of terrestrial biological systems, plant life, forest and agriculture resources	Compost facility may require significant site area depending on capacity of facility, compost method and size of curing area. Large site or numerous sites may result in loss/removal of terrestrial biological systems, forest and agricutural resources.
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables of processing of IC&I sector recyclables of processing of IC&I sector recyclables of the private sector recyclables of small private sector recyclers Additional processing capacity for dry recyclables	IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I security of the IC&I security of IC&I security or IC&I security or IC&I security of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations - Rendering of food wastes from IC&I sector - New composting facility for IC&I organics - Composting of IC&I organics in municipal in-vessel system

Component Net Effects	nified	ntified
Co	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Increased use of food wastes as animal feed Increased use of food waste for human consumption increased landspreading of IC&I organics Use of retilable containers such as packaging by businesses Use of reusable packaging	IC&I Reduction • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	K@l Promotion and Education • IC&l information hotline • Promotion/education program focused on reducing waste disposed by the IC&l sector, carried out by the regional municipality • Promotion/education of IC&l waste reduction by non-profit organizations • Promotion/education of IC&l waste reduction by associations • Promotion/education of IC&l waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&l generators

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D5.2

SYSTEM:

CRITERIA GROUP: CRITERIA:

IC&I Expanded 3Rs Regulations With Organics Natural

INDICATOR:

Potential for Disruption Effects to Terrestrial Systems and Resources Potential for Effects to Terrestrial Systems and Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes - Voluntary source separation of dry recyclables by small IC&I generators - Mandatory source separation of designated materials by most generators - Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclable in some areas by municipal forces - IC&I deposa at transfer stations for use by small business generators - Landfill bans on specified materials	IC&I Collection - Wet Wastes Mandatory source separation of wet wastes by designated IC&I generators Voluntary source separation of IC&I generated organics Separate collection of IC&I wastes wastes

Component Net Effects	• No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclables by small private sector recyclables by small private sector recyclables • Additional processing capacity for dry recyclables	Centralized windrow composting of source separated U&I organics On-site composting of source separated Organics on-site composting of source separated organics generated by the IC&I secure. Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector New composting facility for IC&I organics Composting of IC&I organics in municipal in-vessel system

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Programs Voluntary waste audits performed by small IC&I generators Independent voluntary waste reduction programs in small private companies Mandatory waste audits by most IC&I generators Mandatory packaging agenerators Voluntary packaging generators Voluntary packaging reporting by packaging serse (NAPP)	IC&I Promotion and Education • IC&I information houline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations of Promotion/education of IC&I waste reduction by susceriations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D5.3

SYSTEM: CRITERIA GROUP:

IC&I Expanded 3Rs Regulations With Organics Natural

INDICATOR: CRITERIA:

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes - Voluntary source separation of dry recyclables by small IC&I generators - Mandatory source separation of designated materials by most generators - Collection of source separated dry recyclers by private haulers and recyclers - Curbside collection of IC&I recyclables in some areas by municipal forces - IC&I depots at transfer stations for use by small business generators - IC&I depots at Lansfer stations for use by small business generators - Landfill bans on specified materials	IC&I Collection - Wet Wastes - Mandatory source separation of wet wastes by designated IC&I generators - Voluntary source separation of IC&I generated organics - Separate collection of IC&I wet wastes

Component Net Effects	No effects identified	No loss or removal of aquatic systems or water resources expected due to sting compost facility Potential for loss or removal of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters
Mitigation/ Enhancement	• None required	Locate compost facility in an area away from surface water bodies and drainage courses. Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water. Install features at compost facility to prevent discharge of contaminants to surface water (e.g. storm water management pond) and to prevent management pond) and to prevent surface water tunoff from entering compost area (e.g. berms, ditches around facility)
Component Environmental Effects	No effects identified	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables by small private sector recyclables dry small private sector recyclables dry small private sector recyclables dry recyclables	ICÆI Processing - Wet Wastes - Centralized windrow composing of source separated IC&I organics - On-site composing of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I organics in in-vessel system - Vermicomposting at some IC&I organics in locations - Rendering of food wastes from IC&I sector - New composting facility for IC&I organics - Composting of IC&I organics in municipal in-vessel system

Component Net Effects			No effects identified
Mitigation/ Enhancement	Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being composited to identify and treat contaminants, as required		• None required
Component Environmental Effects			No effects identified
Component Category/ Components		IC&I Reuse	Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Increased use of food waste as animal feed Increased use of food waste for human consumption Increased landspreading of IC&I organics Use of refillable containers such as packaging by businesses Use of reusable packaging

Component Category/	Component	Mitigation/	Component
	Environmental Effects	Enhancement	Net Effects
IC&I Reduction - Voluntary waste reduction actions by small IC&I generators - Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) - Mandatory development of waste reduction action plans by most IC&I generators - Mandatory development of packaging reduction action plans by major reduction action plans by major packaging generators	No effects identified	None required	No effects identified
IC&I Programs - Voluntary waste audits performed by small IC&I generators - Independent voluntary waste reduction programs in small private companies - Mandatory waste audits by most IC&I generators - Mandatory packaging audits by major packaging generators - Voluntary packaging reporting by packaging users (NAPP)	No effects identified	• None required	No effects identified

Component Net Effects	No effects identified
	• No effect
Mitigation/ Enhancement	None required
Component Environmental Effects	No effects identified
Component Category/ Components	IC&I Promotion and Education • IC&I information hotline • Promotion/education program focused on reducing waste disposed by the IC&I secure, rainfed out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by posting of waste reduction plans for review by employees by most IC&I generators

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D5.4

CRITERIA GROUP: SYSTEM:

INDICATOR: CRITERIA:

IC&I Expanded 3Rs Regulations With Organics

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources Natural

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes Voluntary source separation of dry recyclables by small IC&I generators Mandatory source separation of designated materials by most generators Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Landfill bans on specified materials	IC&I Collection - Wet Wastes Mandatory source separation of wet wastes by designated IC&I generators Volunary source separation of IC&I generated organics Separate collection of IC&I wet wastes

Component Net Effects	No disruption to surface water resources expected due to stiring of new MRFs or expanding existing MRFs	Potential for disruption to aquatic systems and water resources due to leachate, silt and organic materials is minimized by facility design features to prevent discharges to surface and ground waters and by proper siting
Mitigation/ Enhancement	Locate facility in compatible area (e.g. industral area) with storm water management features in place (e.g. storm sewers, storm water retention pond)	Locate compost facility in an area away from surface water bodies and drainage courses Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water Install features at compost facility to prevent discharge of contaminants, silt or compost matter to surface water (e.g. storm water management pond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility)
Component Environmental Effects	Expansion of existing or new MRFs covering large area may disrupt local surface water drainage patterns	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems Surface water nuroff from compost facility may disrupt surface water bodies by buildup of silt and organic materials
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclables Additional processing capacity for dry recyclables	IC&I Processing - Wet Wastes - Contralized windrow composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector - Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I organics in in-vessel system - Vermicomposting of food wastes from IC&I sector - New composting of IC&I organics in organics - Rendering of IC&I organics in municipal in-vessel system

Component Net Effects		No effects identified
Mitigation/ Enhancement	Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composition of wastes being composited to identify, remove and treat contaminants as required	None required
Component Environmental Effects	·	No effocts identified
Component Category/ Components		Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators increased use of food wastes as animal feed increased use of food waste for human consumption increased landspreading of IC&I organics Use of refillable containers such as packaging by businesses Use of reusable packaging

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reduction • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators	C&I Programs • Voluntary waste audits performed by small C&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging generators

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Promotion and Education			
IC&I information hotline	 No effects identified 	None required	No effects identified
Promotion/education program focused			
on reducing waste disposed by the			
IC&I sector, carried out by the			
regional municipality			
 Promotion/education of IC&I waste 			
reduction by non-profit organizations			
 Promotion/education of IC&I waste 			
reduction by associations			
 Mandatory posting of waste reduction 			
plans for review by employees by			
most IC&I generators			

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
·		Minimize contact with and general exposure to open air during shredding, mixing, sorting, turning and screening of material Limit operations during adverse weather conditions (i.e. windy weather)	
IC&I Reuse			
Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Increased use of food wastes as animal feed Increased use of food waste for human consumption Increased landspreading of IC&I organics Use of refillable containers such as packaging by businesses Use of reusable packaging	No effects identified	• None required	No effects identified

TABLE D5.5
SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reduction • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by most IC&I generators • Mandatory development of packaging reduction action plans by most IC&I generators packaging generators	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)

TABLE D5.5 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

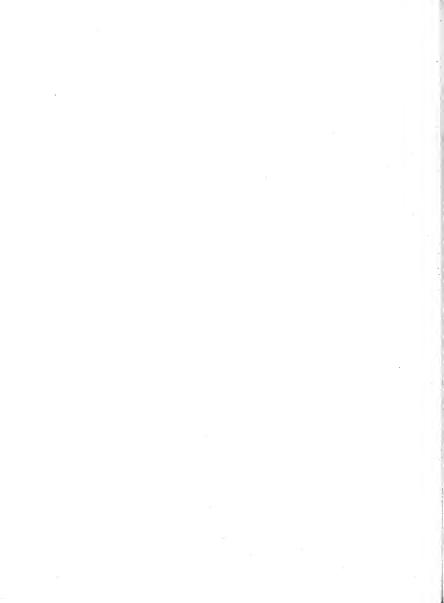
IC&I Expanded 3Rs Regulations With Organics

Natural
Potential for Effects to Atmospheric Environment
Potential for Atmospheric Emissions

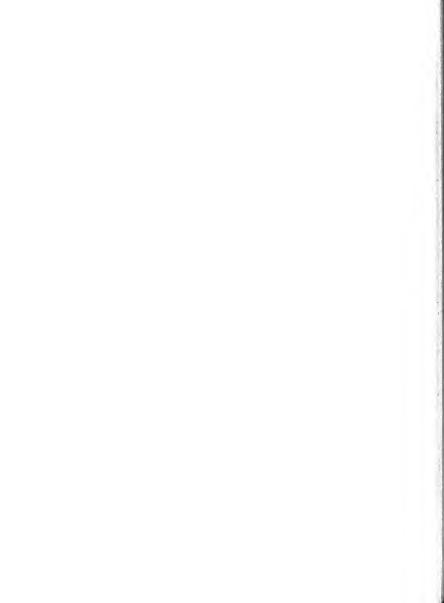
Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by small IC&I generators • Mandatory source separation of designated materials by most generators • Collection of source separated dry recyclers • Collection of source separated dry recyclers • Curbside collection of IC&I recyclers • Curbside collection of IC&I recyclers • Curbside collection of IC&I recyclers • Landill basiness generators • Lendill basiness generators • Landill basiness generators • Landill basiness generators	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase due to increase in collection vehicle traffic.	Decrease speed of collection vehicles Regular vehicle maintenance	Potential for release of dust to the amosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to increase in collection vehicle traffic
IC&I Collection - Wet Wastes Mandatory source separation of wet wastes by designated IC&I generators Voluntary source separation of IC&I generated organics Separate collection of IC&I wastes wastes	Collection vehicles travelling along roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase due to increase in collection vehicle raffic.	Decrease speed of collection vehicles Regular vehicle maintenance	Potential for release of dust to the annosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to increase in collection vehicle traffic.

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables of processing of IC&I sector recyclables by small private sector recyclables dry small private sector recyclables dry small private sector recyclables dry recyclables	Processing of recyclables may generate dust and bioacrosol emissions within the facility resulting in effects	Provide ventilation system to capture building air for temoval of dust and bioacrosols and replace with clean air, either at work stations or for entire facility Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols (e.g. respirator) Daily cleaning of facility equipment and floors	Emissions to atmosphere will be generated in the form of dust and bioacrosols within facility. Provision of ventilation system and personal breathing equipment will reduce but not eliminate exposure to emissions
IC&I Processing - Wet Wastes - Centralized windrow composing of source separated IC&I organics - On-site composing of source separated organics generated by the IC&I sector - Centralized composing of IC&I organics in in-vessel system - Vermicomposing at some IC&I organics in in-vessel system - Vermicomposing at some IC&I organics - Rendering of food wastes from IC&I sector - New composing facility for IC&I organics - New composing facility for IC&I organics - Composing of IC&I organics in municipal in-vessel system	Air emissions in the broad categories of dust, bioaerosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-detectable with no effect on the atmosphere. Increased emissions (c.g. VOCs) expected due to nature of IC&I organics	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as manitalning aerobic conditions and limited storage of puresciple feedstocks before composing Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofiliers	Potential for atmospheric emissions is reduced but not eliminated. Increased emissions (e.g., VOCs) expected due to composition of IC&I organics. No effects expected due to air emissions from compost

Component Net Effects	No effects identified
Mitigation/ Enhancement	None required
Component Environmental Effects	No effects identified
Component Category/ Components	IC&I Promotion and Education • IC&I information houline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees by most IC&I generators







SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D6.1

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

IC&1 Processing of All IC&1 Waste Prior to Landfilling Natural
Potential for Effects to Terrestrial Systems and Resources

Resources
aug
Systems
Terrestrial
ь
Removal
ö
Loss
ξō
Potential

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by small IC&I generators designated materials by most generators • Collection of source separated dry generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • C&I depost at transfer stations for use by small business generators • Landfill bans on specified materials • Mandatory processing of all dry wastes prior to landfilling	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I generated organics • Mandatory source separation of wet wastes by designated IC&I generators • Separate collection of some IC&I westes wastes

Component Net Effects	No loss or removal of terrestrial systems or resources expected due to sting of new MRFs	Potential for loss or removal of terrestrial systems and resources is minimized but not climinated by site selection process and optimal design of compost facilities
Mitigation/ Enhancement	Locate new MRFs in areas of compatible land use (i.e. industrial areas) through stiing process	 Locate compost facilities in areas of compatible land use (i.e. industrial lands, landfill site, agricultural lands) through siting process Design facilities with optimal process method and capacity to reduce number of facilities and area required
Component Environmental Effects	MRFs require site area which may be of sufficient size resulting in the localized loss/removal of terrestrial biological systems, plant life, forest and agriculture resources	Compost facility may require significant site area depending on capacity of facility, compost method and size of curing area. Large site or numerous sites may result in lossy removal of terrestrial biological systems, forest and agricultural resources.
Component Category/ Components	IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector, owned and operated by the private sector. Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables by small private sector recyclers Mandatory processing of all dry wastes prior to landfilling Mandatory processing of all mixed wastes prior to landfilling	IC&! Processing - Wet Wastes - Centralized windrow composting of source separated IC&! organics oparated IC&! organics exparated organics generated by the IC&! sector - Centralized composting of IC&! organics in in-wesed system - Vermicomposting at some IC&! locations - Rendering of food wastes from IC&! sector - New composting facility for IC&! organics in manicipal in-vessel system - New composting of IC&! organics in municipal in-vessel system

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of retilable containers Use of retilable containers	No effects identified	None required	No effects identified
ICÆI Reduction Voluntary waste reduction actions by small ICÆI generators Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) Mandatory development of waste reduction action plans by most ICÆI generators Mandatory development of packaging reduction action plans by most ICÆI generators packaging generators	No effects identified	None required	No effects identified

Component Component Component Component Voluntary waste au small IC&I general independent volunt reduction programs companies Mandatory waste a IC&I generators Mandatory waste a IC&I generators Mandatory packagi packaging generators Mandatory packagi packaging generator Voluntary packagi packaging generator Voluntary packagi packaging users (N C&I Information h Promotion/educatio on reduction by non-p Promotion/educatio regional municipali Promotion/educatio regional municipali Promotion/educatio Promotion/educatio reduction by non-p Promotion/educatio Radatory posting	Category/ nents Category/ Idis performed by Idis performed by Idis performed by Idis by most In anall private In and lots by major In any program focused Idisposed by the Idisposed b
	Component Category/ Components Components Components St. I Programs Voluntary waste audits performed by small LC&I generators Independent voluntary waste reduction programs in small private companies Mandatory waste audits by most IC&I generators Mandatory packaging subjection packaging generators Voluntary packaging reporting by packaging generators Voluntary packaging reporting by packaging users (NAPP) St. I Promotion and Education IC&I information hotline Promotion/deducation of IC&I waste regional, municipality Promotion/deducation of IC&I waste reduction by non-profit organizations Promotion/deducation of IC&I waste reduction by associations Promotion/deducation of IC&I waste reduction by associations Promotion/deducation of IC&I waste reduction by associations Mandatory posting of waste reduction

TABLE D6.2 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

IC&I Processing of All IC&I Waste Prior to Landfilling

CRITERIA GROUP:
CRITERIA:
INDICATOR:

Natural
Potential for Effects to Terrestrial Systems and Resources
Potential for Disruption Effects to Terrestrial Systems and Resources

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes - Voluntary source separation of dry recyclables by small IC&I generators - Mandatory source separation of designated materials by most generators - Collection of source separated dry recyclers or source separated dry recyclers by private haulers and recyclers - Curbside collection of IC&I recyclables in some areas by municipal forces - IC&I depots at transfer stations for use by small business generators - Landfill bans on specified materials - Mandatory processing of all dry wastes prior to landfilling	No effects identified	• None required	No effects identified
IC&I Collection - Wet Wastes - Voluntary source separation of IC&I generated organics - Mandatory source separation of wet wastes by designated IC&I generators - Separate collection of some IC&I wet wastes	No effects identified	• None required	No effects identified

Component Caregory/ Cal Processing - Dry Waters Processing of specific dry materials in specially designed facilities of dry recyclables othered from the private sector recyclables of Cal s	 		
Component Category/ Component Category/ Component Components El Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing of specific dry materials in specially designed facilities Processing of specific dry materials in specially designed facilities Processing of specific dry materials of dry recyclables collected from the ICRI sector, worned and operated by the private sector recyclables by small private sector recyclables of CRI sector recyclables by small private by small private sector recyclables by small priva	Component Net Effects	No effects identified	No effects identified
Component Category/ Component Category/ Component Category/ Component Category/ Components In specially designed facilities Processing of specific dry materials in specially designed facilities Processing of a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector Processing of IC&I sector recyclables in municipal MRFF Processing of IC&I sector recyclables by small private se	Mitigation/ Enhancement	None required	• None required
	Component Environmental Effects	No effects identified	No effects identified
	Component Category/ Components		

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	• None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed on use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging	IÇ&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified .
Component Category/ Components	IC&I Programs • Volunary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)	(2&1 Promotion and Education

SYSTEM NET EFFECTS TABLE BY COMPONENT TABLE D6.3

SYSTEM:

CRITERIA GROUP: CRITERIA:

INDICATOR:

Natural

IC&I Processing of All IC&I Waste Prior to Landfilling

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Loss or Removal of Aquatic Systems Including Surface and Ground Water Resources

Component Net Effects	• No effects identified	No effects identified
Mitigation/ Enhancement	• None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by small IC&I generators dasignated materials by most generators of collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables by private haulers and recyclas of collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators - Landfill bans on specified materials • Mandatory processing of all dry wastes prior to landfilling	IC&I Collection - Wet Wastes • Voluntary source separation of IC&I generated organics • Mandatory source separation of wet wastes by designated TC&I generators • Separate collection of some IC&I wet wastes

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing - Dry Wastes Processing of specific dry materials in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector. Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclables wastes prior to landfilling Mandatory processing of all dry wastes prior to landfilling Mandatory processing of all mixed wastes prior to landfilling	No effects identified	• None required	No effects identified
IC&I Processing - Wet Wastes - Centralized windrow composting of source separated IC&I organics - On-site composting of source separated IC&I organics - On-site composting of source separated organics generated by the IC&I sector IC&I sector organics in in-vessel system - Vermicomposting at some IC&I iccations - Rendering of food wastes from IC&I sector - New composting facility for IC&I organics - New composting facility for IC&I organics - Organics - Composting of IC&I organics in municipal in-vessel system	Compost facility may generate leachate containing constituents in concentrations that may be harmful when discharged to ground and surface waters. This may result in the loss of aquatic biological systems and water resources	Locate compost facility in an area away from surface water bodies and drainage courses Locate compost facility in an area of soils with the capacity to attenuate leachate from discharging to ground water Install features at compost facility to prevent discharge of contaminants to prevent discharge of contaminants to surface water (e.g. storm water management pond) and to prevent surface water runoff from entering compost area (e.g. berms, ditches around facility)	No loss or removal of aquatic systems or water resources expected due to sting compost facility Potential for loss or temoval of aquatic systems and water resources is minimized by installing facility design features to prevent discharges to surface and ground waters

Mitigation/ Component Enhancement Net Effects	• Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) • Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composited to identify and treat contaminants, as required		No effects identified
Component Environmental Effects	Install fe prevent of prevent of ground v g		None required None required
Component Category/ Components	. *	C&I Reuse	Reuse by JC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I containers and packaging of IC&I containers and packaging I'se of reusable packaging I'se of reusable packaging

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	• None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	1C&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major packaging generators	K@L Programs Voluntary waste audits performed by small IC&L generators Independent voluntary waste reduction programs in small private companies. Mandatory waste audits by most IC&L generators Mandatory packaging audits by major packaging generators Voluntary packaging reporting by packaging users (VAPP)

Component Net Effects	No effects identified
Mitigation/ Enbancement	None required
Component Environmental Effects	No effects identified
Component Category/ Components	IC&I Promotion and Education • IC&I information holline • Promotion/education program focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality regional municipality reduction by non-profit organizations • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by posting of waste reduction plans for review by employees by most IC&I generators

TABLE D6.4 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP: CRITERIA:

INDICATOR:

IC&I Processing of All IC&I Waste Prior to Landfilling

Natural

Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources Potential for Disruption Effects to Aquatic Ssystems Including Surface and Ground Water Resources

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	(@EL Collection - Dry Wastes • Voluntary source separation of dry recyclables by small IC&E generators • Mandatory source separation of designated materials by most generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&E depois at uransfer stations for use by small business generators • Landfill bass on specified materials • Mandatory processing of all dry wastes prior to landfilling	K@L Collection - Wet Wastes • Voluntary source separation of IC&I generated organics • Mandatory source separation of wet wastes by designated IC&I generators • Separate collection of some IC&I wet wastes

	Component Errects Expansion of existing or new MRFs covering large area may disrupt local surface water drainage patterns Compost facility may generate leached the containing constituents in concentrations that may be harmful when discharged to ground and surface waters and disrupt aquatic biological systems biological systems of Surface water nunoff from compost facility may disrupt surface water bodies by build-up of silt and organic materials	Expans covering surface surface covering surface surface concent when discussional surface biologic surface facility bodies it organic organic organic
pond) and to prevent surface water runoff from entering compost area		
(e.g. berms, ditches around facility)		

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
		Install features at compost facility to prevent discharge of leachate to ground water (e.g. liner, leachate collection) Ongoing monitoring of any surface water collected on-site, leachate and composition of wastes being composted to identify, remove and treat contaminants as required.	
KC&I Reuse			
Reuse by IC&I generators through waste exchange programs Community-based news programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspræding of IC&I organics Refilling of IC&I containers and	No effects identified	None required	No effects identified
Use of reusable packaging			

Component Net Effects	No effects identified	No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major action contion plans by major packaging generators	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging generators • Voluntary packaging resporting by packaging serser (NAPP)

TABLE D6.4
GENERIC SYSTEM NET EFFECTS TABLE BY COMPONENT (continued)

Component Category/	Component	Mitigation/	Component	
Components	Environmental Effects	Enhancement	Net Effects	
IC&I Promotion and Education - IC&I information holtine - Promotion/deducation program focused on reducing waste disposed by the IC&I sock, carried out by the regional municipality - Promotion/education of IC&I waste reduction by non-profit organizations - Promotion/education of IC&I waste reduction by associations - Promotion/education of IC&I waste reduction by associations - Mandatony posting of waste reduction plans for review by employees by most IC&I generators	No effects identified	None required	No effects identified	

TABLE D6.5 SYSTEM NET EFFECTS TABLE BY COMPONENT

SYSTEM: CRITERIA GROUP:

CRITERIA: INDICATOR:

IC&I Processing of All IC&I Waste Prior to Landfilling Natural

Potential for Effects to Atmospheric Environment Potential for Atmospheric Emissions

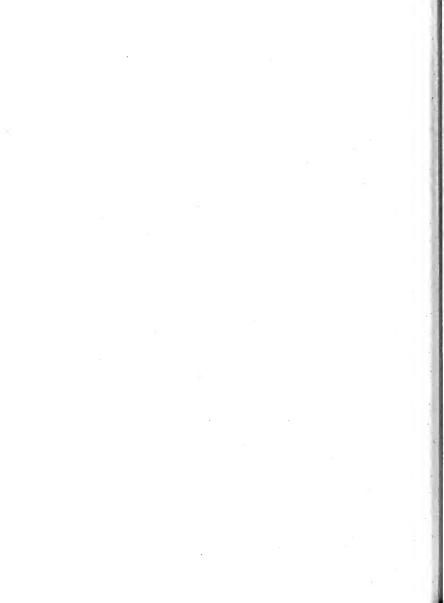
Component Net Effects	Potential for release of dust to the armosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to increase in collection vehicle traffic	Potential for release of dust to the atmosphere by collection vehicles is reduced. Increased dust and exhaust emissions are still expected due to increase in collection vehicle traffic.
Mitigation/ Enhancement	Decrease speed of collection vehicles Regular vehicle maintenance	Decrease speed of collection vehicles Regular vehicle maintenance
Component Environmental Effects	Collection vehicles tavelling along roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase in collection vehicle traffic.	Collection vehicles tavelling along roads may result in release of dust and exhaust to atmosphere. Emissions expected to increase in collection vehicle traffic.
Component Category/ Components	IC&I Collection - Dry Wastes • Voluntary source separation of dry recyclables by small IC&I generators • Mandatory source separation of designated materials by most generators • Collection of source separated dry recyclables by private haulers and recyclables by private haulers and recyclables in some areas by municipal forces • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Landfill bans on specified materials • Mandatory processing of all dry wastes prior to landfilling	LO&L Collection - Wet Wastes Voluntary source separation of IC&I generated organics Mandatory source separation of wet wastes by designated IC&I generators Separate collection of some IC&I wet wastes

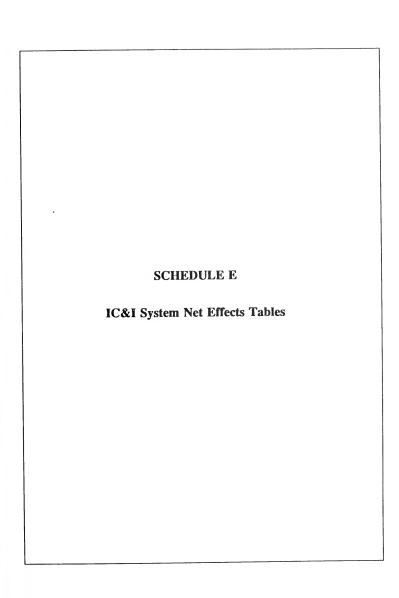
Component Net Effects	Emissions to atmosphere will be generated in the form of dust and bioacrosols within facility. Provision of ventiation system and personal breathing equipment will reduce but not eliminate exposure to emissions	Potential for atmospheric emissions is reduced but not eliminated. Increased emissions (e.g. VOCs) expected due to composition of IC&I organics. No effects expected due to air emissions from compost.
Mitigation/ Enbancement	Provide ventilation system to capture building air for removal of dust and bioacrosols and replace with clean air, either at work stations or for entire facility Provide equipment to individual staff to restrict or prevent exposure to dust and bioacrosols (e.g. respirator) Daily cleaning of facility equipment and floors	Prevent and minimize volatile organic compound (VOCs) emissions by removing HHW from waste stream Proper design and operation of compost facility such as maintaining aerobic conditions and limited storage of purescible feedstocks before composting Install emission controls to capture and treat process and building (if enclosed) air. Types of emission control include chemical scrubbers and biofilters
Component Environmental Effects	Processing of recyclables may generate dust and bioaerosol emissions within the facility resulting in effects	Air emissions in the broad categories of dust, bioacrosols and gascous emissions (volatile organic compounds) are released from compost facilities. However, concentrations of these contaminants are generally very low or non-deucetable with no effect on the atmosphere. Increased emissions (e.g. VOCs) expected due to composition of IC&I organics
Component Category/ Components	IC&I Processing - Dry Wastes • Processing of specific dry materials in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned and operated by the private sector • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers by small private sector recyclers by anall private sector recyclers wastes prior to landfilling • Mandatory processing of all mixed wastes prior to landfilling	C&I Processing - Wet Wastes - Centralized windrow composting of source separated C&I organics On-site composting of source separated organics generated by the IC&I sector Centralized composting of IC&I organics in in-vessel system - Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector New composting facility for IC&I organics - New composting facility for IC&I organics - Ormosoting of IC&I organics in municipal in-vessel system

Component Net Effects		No effects identified
Mitigation/ Enhancement	Minimize contact with and general exposure to open air during shredding, mixing, sorting, tuming and screening of material Limit operations during adverse weather conditions (i.e. windy weather)	• None required
Component Environmental Effects		No effects identified
Component Category/ Components	1	IC&I Reuse Reuse by IC&I generators through waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging Use of reusable packaging

Component Net Effects	No effects identified	• No effects identified
Mitigation/ Enhancement	None required	None required
Component Environmental Effects	No effects identified	No effects identified
Component Category/ Components	IC&I Reduction • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by 25% by the year 2000 (NAPP) • Mandatory development of waste reduction action plans by major IC&I generators • Mandatory development of packaging reduction action plans by major IC&I generators packaging generators	IC&I Programs • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by most IC&I generators • Mandatory packaging audits by major packaging generators • Voluntary packaging reporting by packaging users (NAPP)

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects	
IC&I Promotion and Education				
IC&I information hotline	No effects identified	None required	No effects identified	
 Promotion/education program focused 				
on reducing waste disposed by the				
IC&I sector, carried out by the				
regional municipality				
 Promotion/education of IC&I waste 				
reduction by non-profit organizations				
 Promotion/education of IC&I waste 				
reduction by associations				
 Mandatory posting of waste reduction 				
plans for review by employees by				
most IC&I generators				





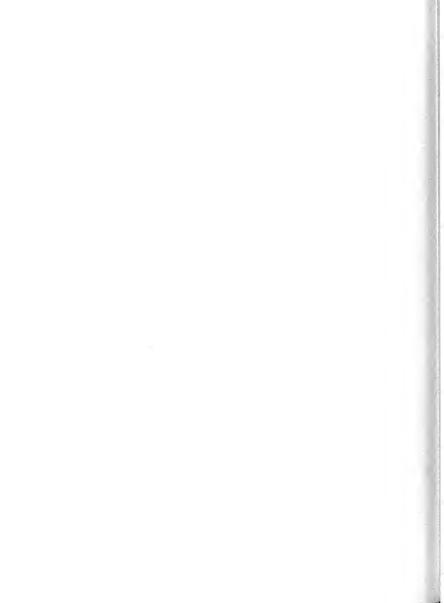


TABLE E.1 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

c: GTA IC&I Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources		
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	No effects identified	Potential effects to terrestrial systems and resources are not expected since facilities already exist	Advantages Potential effects to terrestrial systems and resources not expected since facilities already exist
Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	No effects identified		<u>Disadvantages</u> • None
Criterion: Potential for Effects to Aquat	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	nd Water Resources	
Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Potential for loss or removal of aquatic systems and resources is minimized by installing design features at compost facilities to prevent discharges to surface and ground waters	Potential for effects to aquatic systems and water resources is due to discharges from central compost facilities. The installation of design features to prevent discharges minimizes the potential for effects	Advantages No new facilities required which may result in additional potential effects
Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at compost facilities to prevent discharges to surface and ground waters		Disadvantages Potential for effects due to discharges from existing facilities

TABLE E.1 SYSTEM NET EFFECTS TABLE (continued)

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Atmospheric Environment	ospheric Environment		
Indicator: Potential for Atmospheric Emissions	Dust and exhaust emissions to atmosphere expected due to	Potential effects to the atmospheric environment are expected due to dust	Advantages
	collection vehicles travelling along roads and from unloading depots or bins	and exhaust emissions from collection vehicles vehicles of IC&I organics which have increased proceating the process of the pr	No increase in waste collection requirements or increased processing of IC&I organics which have increased potential for effects
	Exposure to dust, bioaerosols and gaseous emissions at compost or	Emissions including dust, bioaerosols and gaseous emissions are expected	Disadvantages
	MRF facilities may result in effects	at compost facilities and MRFs. Exposure to these emissions may result in effects	Emissions to the atmosphere include dust, exhaust, bioaerosols and gases

TABLE E.2 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

GTA IC&I Existing/Committed

		7				
Advantages/Disadvantages by Criterion		Advantages • Potential effects to terrestrial systems and resources are not expected since facilities already exist	<u>Disadvantages</u> • None		Advantages No new facilities required which may result in additional potential effects	Disadvantages • Potential for effects due to discharges from existing facilities
System Net Effects by Criterion		Potential effects to terrestrial systems and resources are not expected since facilities already exist		d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from central compost facilities. The installation of design features to prevent dischanges minimizes the potential for effects	
System Net Effects by Indicator	strial Systems and Resources	No effects identified	No effects identified	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and resources is minimized by installing design features at compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by installing facility design features at compost facilities to prevent dischages to surface and ground waters
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	Criterion: Potential for Effects to Aqual	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources

TABLE E.2 SYSTEM NET EFFECTS TABLE (continued)

		1			
Advantages/Disadvantages by Criterion		Advantages	No increase in waste collection requirements or increased processing of IC&I organics which have	increased potential for effects Disadvantages	Emissions to atmosphere include dust, exhaust, bioaerosols and gases
System Net Effects by Criterion		Potential for effects to the atmospheric environment are	expected due to dust and exhaust emissions from collection vehicles	Emissions including dust, bioaerosols	and gaseous emissions are expected at compost facilities and MRFs. Exposure to these emissions may result in effects
System Net Effects by Indicator	spheric Environment	Dust and exhaust emissions to atmosphere expected due to	collection vehicles travelling along roads and from unloading depots or bins	Exposure to dust, bioaerosols and	gaseous emissions at compost or MRF facilities may result in effects
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric. Emissions			

TABLE E.3 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

GTA IC&I Extended 3Rs Regulations

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources		,
Indicator. Potential for Loss or Removal of Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate string process for new or expanded MRFs	Potential for effects to terrestrial systems and resources is a result of siting new or expanded MRFs. Effects are minimized by siting process	Advantages None
Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	No effects identified		Disadvanages • Potential for loss or removal of terrestrial systems and resources due to expanding MRFs or sting new MRFs
Criterion: Potential for Effects to Aqual	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	id Water Resources	
Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Potential for loss or removal of aquatic systems and resources is minimized by installing design features at compost facilities to prevent discharges to surface and ground waters	 Potential for effects to aquatic systems and water resources is due to discharges from central compost facilities and locations of new or expanded MRFs. The installation of design features and proper siting of 	Advantages None
Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new or expanded MRPs and installing design features at existing compost facilities to prevent discharges to surface and ground waters	MRFs minimize the potential for effects	Disadvantages Potential for effects due to discharges from existing facilities Now or expanded MRPs required which may result in additional effects

TABLE E.3 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No increase in processing of IC&1	organics	Disadvantages	Emissions to atmosphere include dust, exhaust, bioaerosols and gases	Increased dust and exhaust emissions	from increased collection vehicle	requirements
System Net Effects by Criterion	-	 Potential for effects to the atmospheric environment are expected the to increased dust and 	exhaust emissions from increased collection vehicle requirements	 Emissions including dust, bioaerosols and gaseous emissions are expected 	at compost facilities and MRFs. Exposure to these emissions may	result in effects		
System Net Effects by Indicator	spheric Environment	Increased dust and exhaust emissions to atmosphere expected due to increase in collection vehicle traffic	travelling along roads and from unloading depots or bins	Exposure to dust, bioaerosols and gaseous emissions at compost or	MRF facilities may result in effects			
Criteria/Indicator	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions						-

TABLE E.4 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

GTA IC&I Expanded 3Rs Regulations

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages • Potential for loss or removal of terestrial systems and resources due to expanding MRFs or sting new MRFs		Advantages None	Disadvantages Potential for effects due to discharges from existing facilities New MRFs or expanded MRFs required which may result in additional effects
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new or expanded MRFs. Effects are minimized by stining process.		1 Water Resources	Potential for effects to aquatic systems and water resources is due to discharges from central compost facilities and locations of new or expanded MRFs. The installation of design features and proper sting of	MRFs minimize the potential for effects
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate stining process for new or expanded MRFs	No effects identified	Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and resources is minimized by installing design features at compost facilities to prevent discharges to surface and ground waters	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new or expanded MRFs and installing design features at existing compost facilities to prevent discharges to surface and ground waters
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption Effects to Terrestrial Systems and Resources	Criterion: Potential for Effects to Aquat	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Indicator: Potential for Disruption Effects to Aquaic Systems Including Surface and Ground Water Resources

TABLE E.4 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion		Advantages No increase in processing of IC&1	organics	Disadvantages	Emissions to atmosphere include dust, exhaust, bioaerosols and gases		Increased dust and exhaust emissions	from increased collection vehicle requirements
System Net Effects by Criterion		Potential for effects to the atmospheric environment are expected due to increased dust and	exhaust emissions from increased collection vehicle requirements	Emissions including dust, bioaerosols and gaseous emissions are expected	at compost facilities and MRFs. Exposure to these emissions may	result in effects		
System Net Effects by Indicator	spheric Environment	Increased dust and exhaust emissions to atmosphere expected due to increase in collection vehicle traffic	travelling along roads and from unloading depots or bins	Exposure to dust, bioaerosols and gaseous emissions at compost or	MRF facilities may result in effects			
Criteria/Indicator	Criterion: Potential for Esfects to Atmospheric Environment	Indicator:. Potential for Atmospheric Emissions						

TABLE E.S SYSTEM NET EFFECTS TABLE

	S
GTA	IC&I Expanded 3Rs Regulations With Organic
REGIONAL MUNICIPALITY:	SYSTEM:

Advantages/Disadvantages by Criterion		Advantages None	Disadvantages	Potential for loss or removal of terrestrial systems and resources due to stining new MRFs and compost facilities		<u>Advantages</u> • None
System Net Effects by Criterion		Potential for effects to terrestrial systems and resources is a result of siting new MRFs and compost facilities. Effects are minimized by facility siting process			d Water Resources	Potential for effects to aquatic systems and water resources is due to dischages from central compost facilities and location of new MRFs and compost facilities. The installation of design features and proper siting of MRFs and compost facilities minimize the potential for effects.
System Net Effects by Indicator	strial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for new MRFs and compost facilities	 No effects identified 		Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by proper sting of compost facilities and installing design features at compost facilities to prevent discharges to surface and ground waters
Criteria/Indicator	Criterion: Potential for Effects to Terrestrial Systems and Resources	Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Indicator: Potential for Disruption	Elects to Terresulat Systems and Resources	Criterion: Potential for Effects to Aqua	Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources

TABLE E.5 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion	Disadvantages • Potential for effects due to discharges from existing facilities • New or expanded MRFs and new compost facilities required which may result in additional effects		Advantages None	Disadvantages • Emissions to atmosphere include dust, exhaust, bioaerosols and gases • Increased dust and exhaust emissions from increased collection vehicle requirements • Increased gaseous emissions (e.g. VOCs) due to increased composting and composting and compostion of IC&I organics
System Net Effects by Criterion			Potential for effects to the atmospheric environment are expected due to increased dust and exhaust emissions from increased collection vehicle requirements	Emissions including dust, bioaerosols and gascous emissions are expected at compost facilities and MRFs. Increased emissions (e.g. VOCs) expected due to composition of IC&I organics. Exposure to these emissions may result in effects
System Net Effects by Indicator	Potential for disruption to aquatic systems and water resources is minimized by proper stiring of new or expanded MRFs and compost facilities, and installing design features at new and existing compost facilities to prevent discharges to surface and ground waters	spheric Environment	Increased dust and exhaust emissions to atmosphere expected due to increase in collection vehicle traffic for both dry recyclables and organics travelling along roads and from unloading depots or bins	Exposure to dust, bioaerosols and gaseous emissions at compost or MRF facilities may result in effects. Increased emissions expected due to composition of IC&I organics
Criteria/Indicator	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions	

TABLE E.6 SYSTEM NET EFFECTS TABLE

REGIONAL MUNICIPALITY: SYSTEM:

GTA IC&I Processing of All IC&I Waste Prior to Landfilling

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Potential for Effects to Terrestrial Systems and Resources	strial Systems and Resources	-	
Indicator: Potential for Loss or Removal of Terrestrial Systems and Resources	Potential for loss or removal of terrestrial systems and resources is minimized by following appropriate sting process for new MRFs and compost facilities	Potential for effects to terrestrial systems and resources is a result of siting new MRR's and compost facilities. Effects are minimized by facility siting process	Advantages . None
Indicator: Potential for Disruption Effects to Terrestrial Systems and	No effects identified		Disadvantages
Resources	*		 Potential for loss or removal of terrestrial systems and resources due to siting new MRFs and compost facilities
Criterion: Potential for Effects to Aquatic Systems Including Surface and Ground Water Resources	ic Systems Including Surface and Groun	d Water Resources	
Indicator: Potential for Loss or Removal of Aquatic Systems Including Surface Water and Ground Water Resources	Potential for loss or removal of aquatic systems and water resources is minimized by proper stining of compost facilities and installing design features at compost facilities to prevent discharges to surface and ground waters	Potential for effects to aquatic systems and water resources is due to discharges from central compost facilities and location of new MRFs and compost facilities. The installation of design features and proper sting of MRFs and compost facilities minimize the potential for effects.	Advantages None

TABLE E.6 SYSTEM NET EFFECTS TABLE (continued)

Advantages/Disadvantages by Criterion	Disadvantages Potential for effects due to discharges from existing facilities New or expanded MRFs and new compost facilities required which may result in additional effects		Advantages None	Disadvantages • Emissions to atmosphere include dust, exhaust, bioaerosols and gases • Increased dust and exhaust emissions from increased collection vehicle requirements	Increased gaseous emissions (e.g. VOCs) due to increased composting and composition of IC&I organics
System Net Effects by Criterion			Potential for effects to the atmospheric environment are expected due to increased dust and exhaust emissions from increased collection vehicle requirements	Emissions including dust, bioaerosols and gaseous emissions are expected a compost facilities and MRFs. Increased emissions (e.g. VOCs) expected due to composition of IC&I organics. Exposure to these emissions may result in effects	
System Net Effects by Indicator	Potential for disruption to aquatic systems and water resources is minimized by proper siting of new or expanded MRFs and compost facilities, and installing design facilities to prevent discharges to surface and ground waters	spheric Environment	Increased dust and exhaust emissions to atmosphere expected due to increase in collection vehicle traffic for both dry recyclables and organics travelling along roads and from unloading depots or bins	Exposure to dust, bioaerosols and gascoue emissions at compost or MRF facilities may result in effects. Increased emissions expected due to composition of IC&1 organics	
Criteria/Indicator	Indicator: Potential for Disruption Effects to Aquatic Systems Including Surface and Ground Water Resources	Criterion: Potential for Effects to Atmospheric Environment	Indicator: Potential for Atmospheric Emissions		



